CATEGORY : Microbiology

ABS. JOUR. : Ref Zhur-Biologiya, No.4, 1959, No.14885

AUTHOR : Khomik, Z.R.; Galayev, Yu.V.

INST. :

TITLE : The Biochemistry of Amino Acid Metabolism in Salmonella Breslau.

ORIG. PUB. : Zh. mikrobiol., epidemiol. i immunobiol., 1958, No. 4, 52-58

ABSTRACT : The decarboxylizing activity of freshly isolated strains was studied using the method of paper electrophoresis separation of amino acids and of the amines derived from them and employing a veronal buffer with a pH of 8.62. Decarboxylase was determined for histidine, arginine, lysine, and glutamic acid. Altogether 67 strains were tested which had been isolated from man and animals; 29 strains were preliminarily passed once or more through

CARD: 1/3

52

CATEGORY : Microbiology.

ABS. JOUR. : Ref Zhur-Biologiya, No. , 1959.

AUTHOR :

INST. :

TITLE :

ORIG. PUB. :

ABSTRACT : cats or mice, and 24 strains were isolated from children with gastro-intestinal disorders. The latter strains did not agglutinate with the Breslau serum, although they did not differ from the paratyphoid cultures by the biochemical criteria. Almost all the strains decarbolized arginine, but few of them lysine and histidine. Atypical (non-agglutinating and not forming H_2S) strains decarbolized glutamic acid more often. Strains isolated

CARD: 2/3

COUNTRY :
CATEGORY : Microbiology

ABS. JOUR. : Ref Zhur-Biologiya, No. 4, 1959 No. 14885

AUTHOR
INST. 1. Iz Rostovskogo instituta epidemiologii, mikrobiologii i gigiyeny i kafedry biokhimii Rostovskogo meditsinskogo instituta.

TITLE (SALMONELLA, metabolism,
breslau, amino acids (Rus)
(AMINO ACIDS, metab.
Salmonella breslau (Rus)

ORIG. PUB. :

ABSTRACT : at autopsy from cats or from patients with a prolonged and severe illness ordinarily decarbolized histidine. . But this property was not related to the virulence of the strain. Strains isolated from the same patients during the course of the illness, passed strains, and strains stored for a long time altered the antigenic structure and correspondingly the decarbolizing activ-
: ity.

CARD: 3/3

KHOMIK, S.R.

Characteristics of strains of S. breslau isolated in Rostov Province, antha's abstract. Zhur.mikrobiol.epid. i immun. 29 no.5:128-129 My '58 (MIRA 11:6)

1. Iz Rostovskogo instituta epidemiologii, mikrobiologii i gigiyeny.

(SALMONELLA,
breslau, nature of strains isolated in Russia (Rus))

KHOMIK, S.R.; GALAYEV, Yu.V.

Glutamin-decarboxylic and differential diagnosis of Salmonella and paracolon bacilli. Zhur.mikrobiol.epid.i immun. 30 no.7:60-63 Jl '59. (MIRA 12:11)

1. Iz Rostovskogo-na-Donu instituta epidemiologii, mikrobiologii i gigiyeny i Rostovskogo-na-Donu meditsinskogo instituta.
(SALMONELLA INFECTIONS - diagnosis)
(PARACOLOBACTRUM - infections)

GALAYEV, Yu.V. [Halaiev, IU.V.]; KHOMIK, S.R.

Pathogenesis of Salmonella breslau infections. Mikrobiol. zhur. 22 no. 1:34-39 '60. (MIRA 13:10)

1. Rostovskiy-na-Domu gosudarstvennyy meditsinskiy institut.
(SALMONELLA TYPHIMURIUM) (ARGININE DECARBOXYLASE)

FERDINAND, Ya.M.; KHOMIK, S.R.; LEBEDEVA, Ye.A.

Ways of reducing further the incidence of typhoid fever. Zdrav. Ros. Feder. 5 no. 4:13-16 Ap '61. (MIRA 14:4)

1. Iz Rostovskogo nauchno-issledovatel'skogo instituta epidemiologii, mikrobiologii i gigiyeny.
(TYPHOID FEVER)

GALAYEV, Yu.V.; KHOMIK, S.R.

Preparation with an arginine-decarboxylase activity obtained from S.typhimurium and its effect in an experiment; author's abstract. Zhur.mikrobiol.epid.i immun. 31 no.8:141 Ag '60. (MIRA 14:6)

1. Iz Rostovskogo meditsinskogo instituta i Rostovskogo instituta epidemiologii, mikrobiologii i gigiyeny.
(SALMONELLA TYPHIMURIUM) (ARGININE)
(DECARBOXYLASE)

KHOMIK, S.R.; GALAYEV, Yu.V.; LEBEDEVA, Ye.A.

Effect of tetracycline on amino acid decarboxylase of Salmonella typhimurium. Antibiotiki 7 no.6:548-551 Je '62. (MIRA 15:5)

1. Rostovskiy institut epidemiologii, mikrobiologii i gigiyeny i kafedra biokhimii Rostovskogo meditsinskogo instituta.
(TETRACYCLINE) (SALMONELLA TYPHIMURIUM)
(AMINO ACID DECARBOXYLASES)

PODLEVSKIY, A.V.; KOGAN, V.Ya.; GORCHAKOVA, Yu.P.; YELIZAROVSKIY, G.I.; RYABOSHAPKA, A.P.; REZNIK, S.R.; GOLUBEV, T.I.; GINTSE, L.A.; RASKIN, M.M.; ZUYENKO, P.G.; KHOMIK, S.R.; KATSNEL'SON, I.A.; ZHILIN, S.I.; LYSENKOV, M.N.; ROMANOV, B.G.; SAVENKOV, D.A.; GIL', L.T.; LEVINA, Ye.S.; VOVKI, A.S.; POSLEDOV, F.F.

Annotations. Zhur.mikrobiol.,epid.i immun. 32 no.12:120-125 D '61. (MIRA 15:11)

1. Iz Leningradskogo instituta usovershenstvovaniya vrachey imeni Kirova (for Podlevskiy). 2. Iz Ukrainskogo nauchno-issledovatel'skogo instituta kommunal'noy gigiyeny (for Kogan). 3. Iz Voronezhskogo meditsinskogo instituta (for Gorchakova). 4. Iz Arkhangel'skogo meditsinskogo instituta (for Yelizarovskiy). 5. Iz Kiyevskogo instituta epidemiologii i mikrobiologii (for Ryaboshapka, Reznik). 6. Iz zavoda meditsinskikh preparatov Leningradskogo myasokombinata imeni S.M.Kirova (for Golubev). 7. Iz Gosudarstvennogo kontrol'nogo instituta meditsinskikh biologicheskikh preparatov imeni Tarasevicha (for Gintse). 8. Iz Chitinskogo instituta epidemiologii, mikrobiologii i gigiyeny (for Raskin). 9. Iz Ternopol'skogo meditsinskogo instituta (for Zuyenko). 10. Iz Rostovskogo instituta epidemiologii, mikrobiologii i gigiyeny (for Khomik). 11. Iz Chelyabinskogo meditsinskogo instituta (for Gil', Levina, Vovki, Posledov).

(IMMUNOLOGY--ABSTRACTS) (EPIDEMIOLOGY--ABSTRACTS)

LEBEDEVA, Ye.A.; KHOMIK, S.R.; MEDYUKHA, G.A.

Data from an epidemiological study of salmonellosis foci in Rostov-on-Don. Zhur. mikrobiol., epid. i immun. 33 no.12: 25-30 D '62. (MIRA 16:5)

1. Iz Rostovskogo-na-Donu instituta epidemiologii, mikrobiologii i gigiyeny.

(ROSTOV-ON-DON—SALMONELLA INFECTIONS)

KHOMIK, S.R.

Characteristics of immunity in salmonelloses. Zhur. mikrobiol., epid. i immun. 40 no.3:68-72 Mr '63.
(MIRA 17:2)

1. Iz Rostovskogo-na-Donu instituta epidemiologii, mikrobiologii i gigiyeny.

KOVALEVSKAYA, I.L.; EPSHTEYN-LITVAK, R.V.; DMITRIYEVA-RAVIKOVICH, Ye.M.; KURNOSOVA, N.A.; SHCHEGLOVA, Ye.S.; FERDINAND, Ya.M.; KHOMIK, S.R.; MAKHLINOVSKIY, L.P.; PETROVA, S.S.; GOLUBOVA, Ye.Ye.; GONCHAROVA, Z.I.; SARMANEYEV, A.P.; SIZINTSEVA, V.P.; Prinimali uchastiye: MEDYUKHA, G.A.; OSOKINA, L.A.; RACHKOVSKAYA, Yu.K.; OSOVTSEVA, O.I.; DEDUSENKO, A.I.; KOVALEVA, P.S.; KARASHEVICH, V.P.; CHEBOTAREVICH, N.D.; CHIGIR', T.R.; SKUL'SKAYA, S.D.; KECHETZHIYEV, B.A.; DEMINA, A.S.; ZUS'MAN, R.T.; YESAKOV, P.I.; SYSOYEVA, Z.A.; ZINOV'YEVA, I.S.; FAL'CHEVSKAYA, A.A.; DENISOVA, B.D.; TIMOFEYEVA, R.G.; SYRKASOVA, A.V.; LYANTSMAN, S.G.

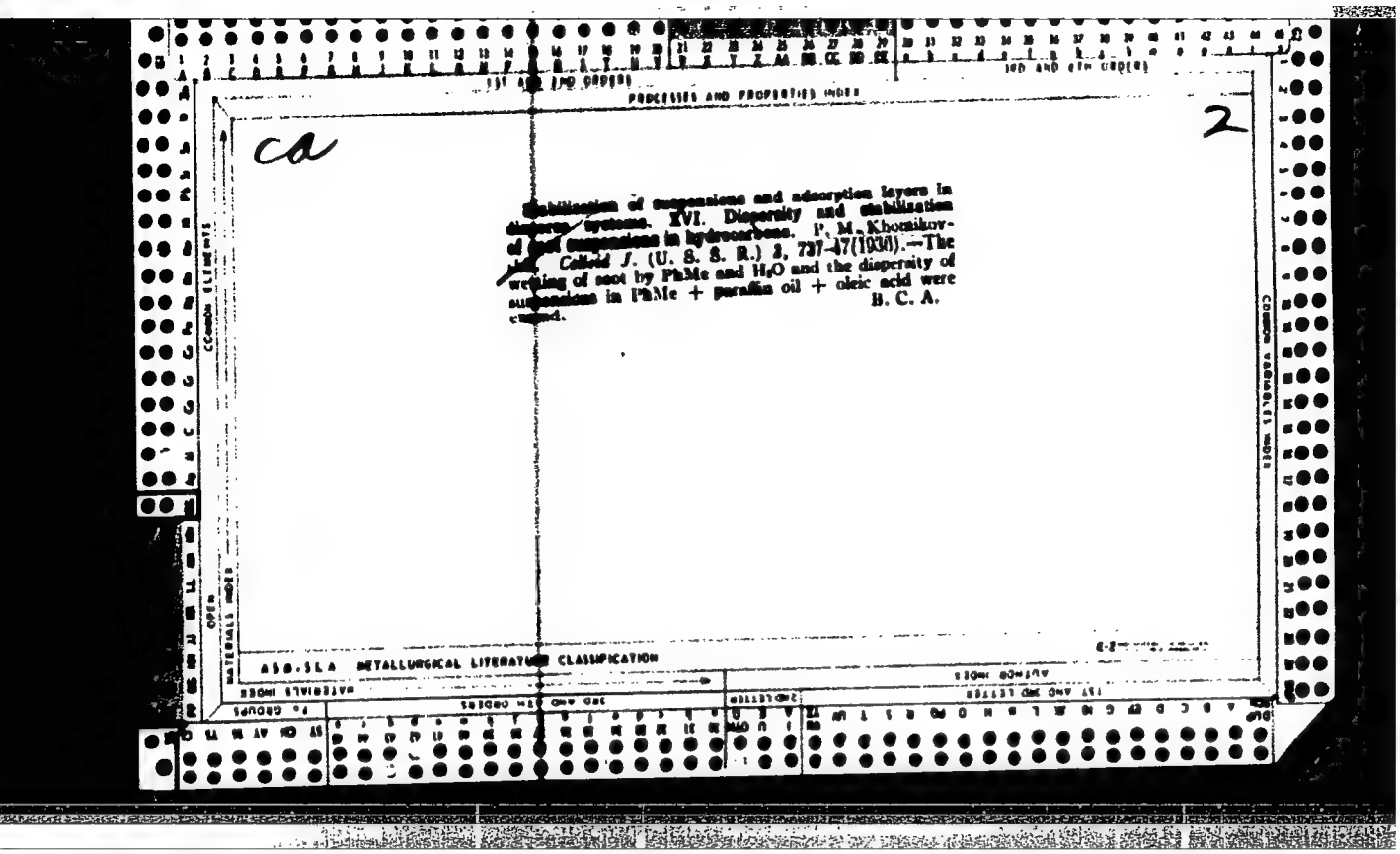
Reactivity and immunological and epidemiological effectiveness of alcoholic typhoid and paratyphoid fever vaccines in school children. Zhur. mikrobiol., epid. i immun. 33 no.7:72-77 Jl '62. (MIRA 17:1)

1. Iz Moskovskogo, Rostovskogo, Omskogo institutov epidemiologii i mikrobiologii, Stavropol'skogo instituta vaktsin i syvorotok i Ministerstva zdravookhraneniya RSFSR. 2. Rostovskiy institut epidemiologii i mikrobiologii (for Kovaleva). 3. Stavropol'skiy institut vaktsin i syvorotok (for Sysoyeva). 4. Kuybyshevskiy institut epidemiologii i mikrobiologii (for Zinov'yeva). 5. Saratovskaya gorodskaya sanitarno-epidemiologicheskaya stantsiya (for Lyantsman).

KHOMIK, Yu., udarnik kommunisticheskogo truda, komandir samoleta Yak-12A.

Productivity depends on the air pilot. Grazhd. av. 20 no.6: 6-7 Je '63. (MIRA 16:8)

(Aeronautics in agriculture)

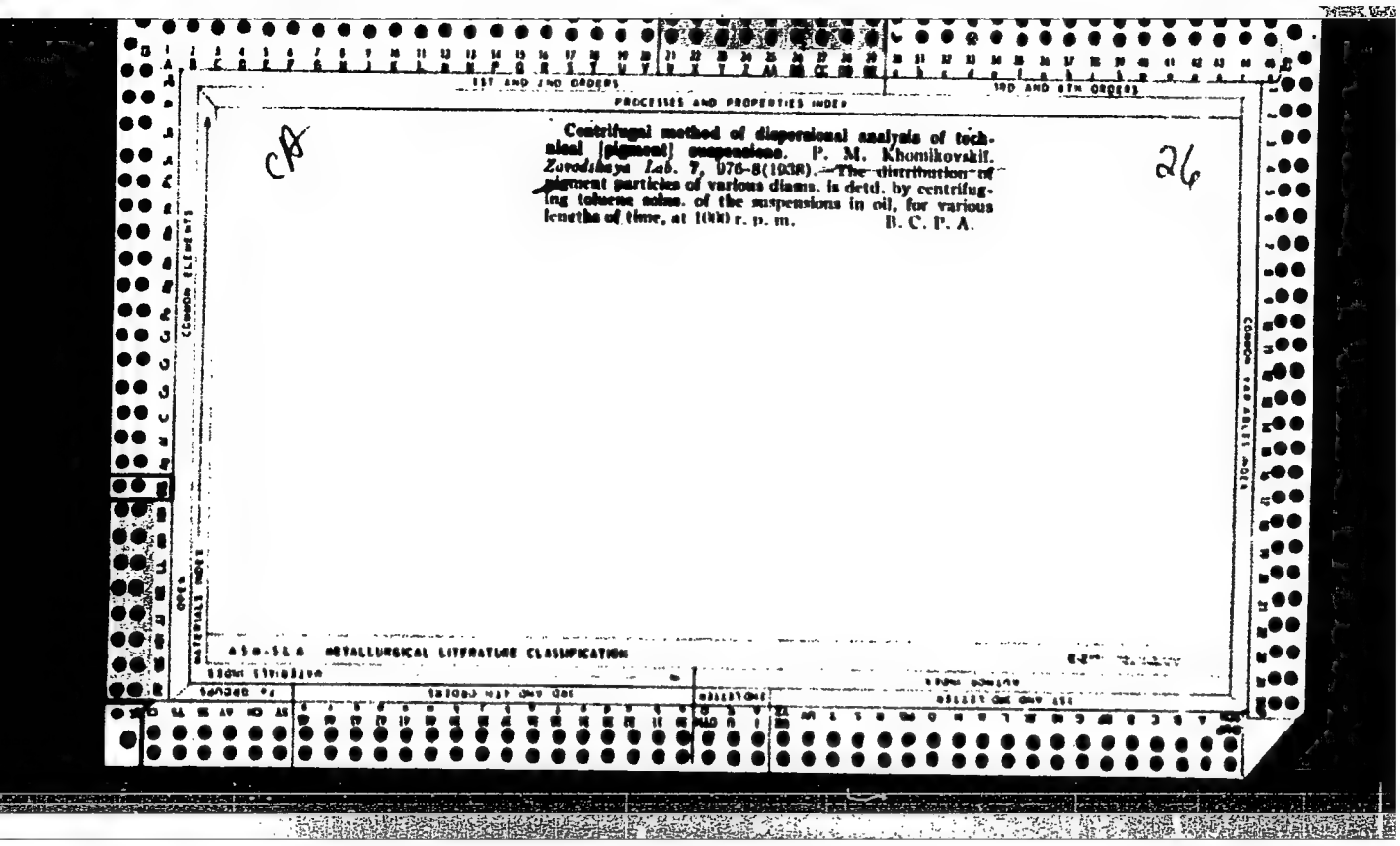


ca

2

Stabilization of suspensions and adsorption layers in dispersoid systems. XVI. Dispersity and stabilization of coal suspensions in hydrocarbons. P. M. Khomikov-skii. *Colloid J.* (U. S. S. R.) 3, 737-47(1938).—The wetting of soot by PhMe and H_2O and the dispersity of suspensions in PhMe + paraffin oil + oleic acid were studied. B. C. A.

A50-5LA METALLURGICAL LITERATURE CLASSIFICATION



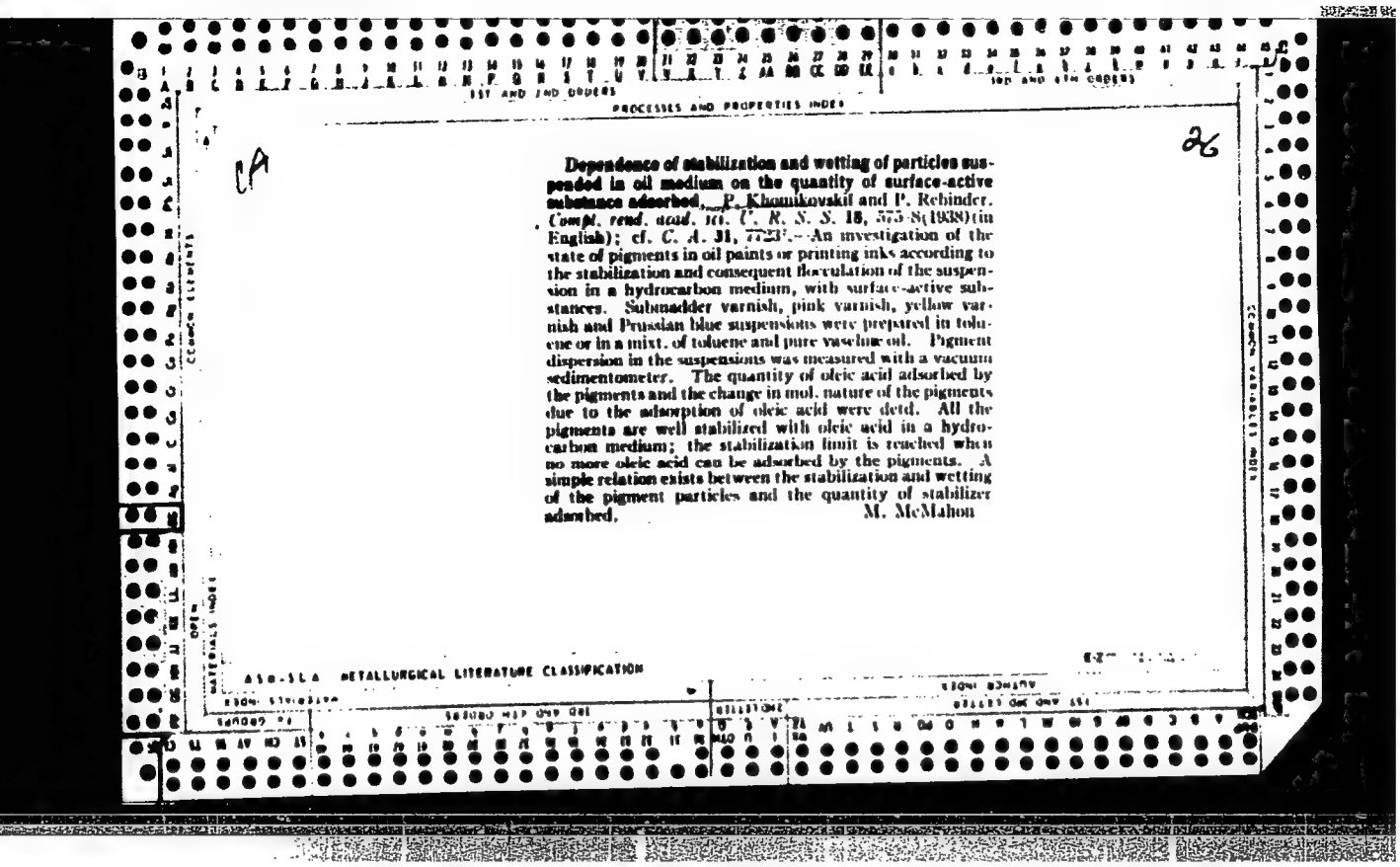
PROCESSES AND PROPERTIES INDEX

CA

26

Centrifugal method of dispersional analysis of technical [pigment] suspensions. P. M. Khomikovskii. *Zavodskaya Lab.* 7, 976-8(1938).—The distribution of pigment particles of various diams. is detd. by centrifuging toluene susps. of the suspensions in oil, for various lengths of time, at 1000 r. p. m. B. C. P. A.

METALLURGICAL LITERATURE CLASSIFICATION



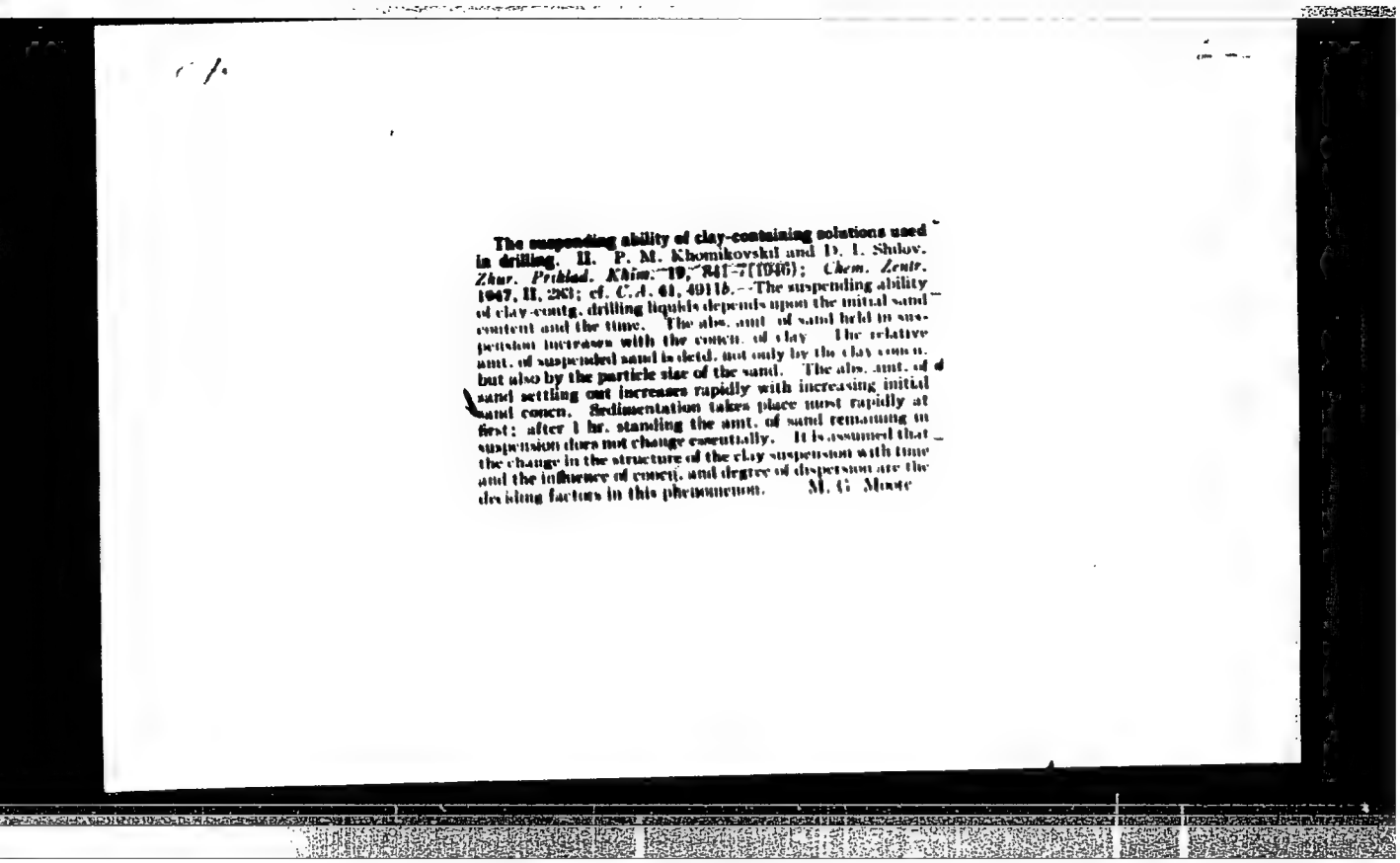
PROCESSES AND PROPERTIES INDEX

1A

26

Dependence of stabilization and wetting of particles suspended in oil medium on the quantity of surface-active substance adsorbed. P. Khomikovskiĭ and P. Rehinder. *Compt. rend. acad. sci. U. R. S. S.* **18**, 575-8(1938)(in English); cf. *C. A.* **31**, 7723[1].—An investigation of the state of pigments in oil paints or printing inks according to the stabilization and consequent flocculation of the suspension in a hydrocarbon medium, with surface-active substances. Submadder varnish, pink varnish, yellow varnish and Prussian blue suspensions were prepared in toluene or in a mixt. of toluene and pure vaseline oil. Pigment dispersion in the suspensions was measured with a vacuum sedimentometer. The quantity of oleic acid adsorbed by the pigments and the change in mol. nature of the pigments due to the adsorption of oleic acid were detd. All the pigments are well stabilized with oleic acid in a hydrocarbon medium; the stabilization limit is reached when no more oleic acid can be adsorbed by the pigments. A simple relation exists between the stabilization and wetting of the pigment particles and the quantity of stabilizer adsorbed. M. McMahon

A58-51A METALLURGICAL LITERATURE CLASSIFICATION



The suspending ability of clay-containing solutions used in drilling. II. P. M. Khomikovskii and D. I. Shilov. *Zhur. Prikład. Khim.* 19, 841–7 (1946); *Chem. Zentr.* 1947, II, 283; cf. *C.A.* 41, 4911b.—The suspending ability of clay-contg. drilling liquids depends upon the initial sand content and the time. The abs. amt. of sand held in suspension increases with the concn. of clay. The relative amt. of suspended sand is detd. not only by the clay concn. but also by the particle size of the sand. The abs. amt. of sand settling out increases rapidly with increasing initial sand concn. Sedimentation takes place most rapidly at first; after 1 hr. standing the amt. of sand remaining in suspension does not change essentially. It is assumed that the change in the structure of the clay suspension with time and the influence of concn. and degree of dispersion are the deciding factors in this phenomenon. M. G. Manec

PA-77T3

KHOMIKOVSKIY, P. M.

USSR/Chemistry - Polymerization, in Soap Solutions May 1948

Chemistry - Emulsifiers

"On the Mechanism of Emulsion Polymerization; Polymerization in Water and Soap Solutions," P. M. Khomikovskiy, Phys Chem Inst imeni L. Ya. Karpov, 4 pp

"Dok Ak Nauk SSSR" Vol LX, No 4 - p.615-18

Increased speed of emulsion polymerization, as compared with polymerization in homogeneous systems, has not been satisfactorily explained. Colloidal solution of monomers in solutions of emulsifiers and micelle polymerization do not account for increase in speed. Author describes his experiments and comments on results. Submitted 7 Jan 1948.

77T3

KHOMIKOVSKIY, P [redacted]

USSR/Chemistry - Emulsions
Chemistry - Polymerization

Sep 48

"Mechanism of Emulsion Polymerization: 1, Polymerization of Vinylcyanide in Aqueous Solutions," P. Khomikovskiy, S. Medvedev, Lab of Polymerization Processes, Physicochem Inst imeni L. Ya. Karpov, Moscow, 7 pp

"Zhur Fiz Khim" Vol XXII, No 9 - p 1027

PA 56/49T17

Determines relation of rate of polymerization of vinylcyanide in aqueous solutions to concentration of the monomer, concentration of the initiator (potassium persulfate), and to temperature. Initiation of polymerization comes about by formation of a

[redacted]

56/49T17

USSR/Chemistry - Emulsions (Contd)

Sep 48

group of atoms from a molecule of the monomer and a molecule of the initator and the subsequent reaction of the group with another molecule of the monomer to form two radicals. A break in the chain reaction occurs either through recombination or from a reaction of the polymer with the persulfate, depending on the concentration of the initiator. Submitted 9 Jan 48.

56/49T17

KHOMIKOVSKIY, P. M.

22371-Khomikovskiy, P.M. Teoriya Emul'sionnoy Polimerizatsii, Stat'ya 2. Vysokomolekulyar Soyedineniya, Vyp. 8, 1949, S. 1-13.-Bibliogr: S.13- Stat'ya I: Vyp. 7, 1948

SO: Letopis' No. 30 1949

CA

31

Polymerization of 1,1-dichloroethylene in solutions of emulsifiers under the action of water-soluble peroxide. G. V. Tkachenko and P. M. Khomikovskii. *Doklady Akad. Nauk S.S.S.R.* 72, 343-6(1950).—The *kinetics* of the polymerization were detd. with 1,1-$C_2H_2Cl_2$ chosen as representative of monomers practically insol. in H_2O; also, the polymer swells only to a limited extent in its monomer. The distribution coeff. of the monomer between H_2O and micelles of the emulsifier, Na salts of C_{12}–C_{16} alkylsulfonic acids and K palmitate, was detd. to ~500 at 40°. In runs with the soln. constantly kept satd. with the monomer through feeding from the vapor phase, the rate of polymerization, r, at 40° without emulsifier is exceedingly slow. With a concn. of emulsifier c = 0.1–0.5%, r is slow in the initial period, then changes to a faster stationary rate. With 3–10% an initially very fast r is followed, at the time τ_1, by a level branch of very slow polymerization, going over, at τ_2, into a linear branch of const. r. At this stationary stage, r increases with c between 0.1 and 5%, and remains unchanged between c = 5 and 10%. The activation energy of the over-all reaction between 40 and 50° is 14 kcal./mole. In contrast to water-sol. monomers (methacrylates, C_3H_3CN, etc.), polymerization in this system, if one active particle (involving one or a few mols. of the monomer) is to be available per micelle of the soap of 25-A. radius, requires a soap concn. of the order of 1–10%. The initial sharp rise of the polymerization curves is detd. by soln. of the monomer in the emulsifier; the inflection at τ_1 corresponds to satn. of the soln. and of the micelles with monomer. The range of const. r, from τ_2 on, corresponds to a reaction taking place in the polymer particles or, predominantly, at their surface, after the monomer dissolved in the soap micelles has been consumed. The dependence of the stationary r on c is evidently linked with a decrease of the size of the polymer particles with increasing c. The main role of the emulsifier thus consists in a stabilization of the polymer particles. The bulk of the polymer is formed at the polymer particles, irrespective of the location of the initiation.

N. Thon

CA

31

Polymerization in solutions of emulsifiers under the action of benzoyl peroxide. Z. N. Markina, P. M. Khomikovskii, and S. S. Medvedev. *Doklady Akad. Nauk S.S.S.R.* 79, 243-6(1950).—(1) The soly. of Bz_2O_2 in soap solns. (Na salts of fatty sulfonic acids C_{12}-C_{16}) was detd. in sealed tubes under N_2 at 20°. Satn. is attained in 6–9 hrs. Relative to the amt. of soap (1.25–20% in soln.), the amt. of Bz_2O_2 dissolved is approx. const., ~0.003 g. Bz_2O_2/g. soap. (2) Initial rates of polymerization in emulsion of CH_2:CHCN (I) (initial concn. 8%) in preliminarily Bz_2O_2-satd. soap solns. of 1.25, 2.50, 5.0, 10, and 20%, measured by dilatometry, under N_2 at 60°, were 0.30, 0.43, 0.60, 0.79, and 1.10 × 10^{-4} mole/l./min.; for methyl methacrylate (II) (initial concn. 2%), in soap 2.50, 5.0, 15, and 20%, 14, 9.5, 7.6, and 4.0 × 10^{-6}; styrene (III) (1.5%) in soap 5.0, 10, and 20%, 4.7, 2.1, and 1.4 × 10^{-6}. The rate of polymerization w of the monomer dissolved in the soap micelles is $w = k_1 a_1^{n}/v_1^{n-1}$, where n is the order with respect to the concn. of the monomer, v = vol.; the total amt. of the polymer $a = a_1 + a_2$, with the subscripts 1 and 2 referring to soap micelles and to H_2O, resp. With the distribution coeff. of the monomer between the soap and H_2O, $K = (a_1/v_1)/(a_2/v_2)$, one has $w = k_1(a^n/v^n)K^n/[1 + (K - 1)q]^n$, where v = total vol., and $q = v_1/v$. At $q = q_m$, defined by $q_m = 1/[1 - K + n(K - 1)]$ (from the condition $dw/dq = 0$), w must pass through a max. the values of K (at 60°) and q_m are: I, 4 and 0.65; II, 80 and 0.01; III, 1500 and 0.001. Consequently, for I, the initial w should increase up to a soap concn. c of 65%, whereas for II and III it should fall at c higher than 1 and 0.1%, resp., in agreement with the observations. The existence and the position of the max. of w is detd. by K. At $K \geq 100$, practically all of the monomer is dissolved in the soap even at low c(~1%), and an increase of c must cause a decrease of w on account of the lowering of a_1 at const. a_2. At low K ~1–10, a_1 increases faster than a_2 over a wide range of c, hence w must increase. (3) In solns. of emulsifiers in the presence of peroxides vol. in the monomer, polymerization takes place in the soap micelles in which the monomer and the peroxide are dissolved. Significantly, if Bz_2O_2, instead of being preliminarily dissolved in the soap, is added as a solid or dissolved in the monomer, the initial rates are not reproducible, owing to the slowness of the satn. of the soap micelles with Bz_2O_2. Only in emulsion polymerization in the presence of little-sol. peroxides does the process occur to a significant degree also in the emulsion drops.

N. Thon

MALINSKIY, Yu. M.; KHOMIKOVSKIY, P.M.

Properties and structure of low-temperature rubbers. Vsesoyuz. Khim. Obshchestvo im. D.I. Mendeleyeva, Vysokomolekul. Soedineniya No.11, 17-25 '51.
(CA 47 no.14:7247 '53)

KHOMIKOVSKIY, P. M.

183T22

USSR/Chemistry - Plastics and Elastomers — May/Jun 51

"Mechanism of Emulsion Polymerization. Polymerization of 1,1-Dichloroethylene in Solutions of Emulsifiers," G. V. Tkachenko, P. M. Khomikovskiy, Moscow

"Kolloid Zhur" Vol XIII, No 3, pp 217-225

Detd colloidal soly of 1, 1-dichloroethylene in emulsifier solns of different concns. Showed for 0.1-10% concns, the concn of dichloroethylene in emulsifier micelles is approx const (34-38%). Studied effect of concn of emulsifier on rate of

ID 183T22

USSR/Chemistry - Plastics and Elastomers (Contd) — May/Jun 51

polymerization of 1,1-dichloroethylene under influence of $K_2S_2O_8$. Examd possible locations of elementary reactions during polymerization in solns of emulsifiers and in emulsions depending on nature of peroxide initiator (sol in H_2O or monomer) and on soly of monomer in H_2O.

ID 183T22

KHOMIKOVSKIY, P. M.

USSR/Chemistry - Plastics — Jul 51

"Kinetics of the Polymerization of Vinyl Chloride in Solutions Under the Action of Benzoyl Peroxide," G. V. Tkachenko, P. M. Khomikovskiy, S. S. Medvedev, Moscow

"Zhur Fiz Khim" Vol XXV, No 7, pp 823-836

Polymerization of vinyl chloride in dichloroethane soln at 40-70°C is of the 1.5 order relative to concn of monomer and reaction rate is proportional to square root of benzoyl peroxide concn. Polymerization in C_6H_6 soln is of the same order, but reaction rate is proportional to square root of

206T24

USSR/Chemistry - Plastics (Contd) — Jul 51

benzoyl peroxide concn only at 2-5% concns. Total reaction rate is much lower in C_6H_6 than in dichloroethane soln. Discusses polymerization and calculates activation energies.

206T24

MALINSKIY, U. M.; KHOMIKOVSKIY, P.M.

Rubber

Properties and structure of low temperature rubbers., Vysokomolek, soed., no. 11, 1952.

Monthly List of Russian Accessions, Library of Congress, March 1952. Unclassified.

ABKIN, A.D.; MEDVEDEV, S.S.; KHOMIKOVSKIY, P.M.; ZABOLOTSKAYA, Ye.V.

Kinetics and mechanism of the copolymerization of vinyl chloride and vinylidene chloride. Zhur.fiz.khim. 27 no.10:1516-1524 O '53. (MLRA 6:12)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova, Moscow. (Polymers and polymerization) (Vinyl chlorides)

KHOMIKOVSKIY, P.M.

Chemical reactions in dispersed systems in connection with the mechanism of emulsion polymerization. P. M. Khomikovskiĭ and S. S. Medvedev. *Trudy 2 Vsesoyuz. Konf.-Kolloid. Khim., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1956, 443–9.—Elementary reactions taking place during emulsion polymerization are discussed and several sources, mostly Russian, are quoted. Examples given are polymerization of styrene and of Me methacrylate in water and in emulsifier solns. such as Na laurate. The increase of the total velocity of the reaction during the emulsion-polymerization takes place not only because of the decrease in the velocity of the chain-breaking reaction but also because of the increase in initiation reaction velocity. The process of initiation is considered a complex reaction consisting of 2 stages: the decompn. of the initiator into free radicals and their interaction with the monomer (initiation proper). The increase in the velocity of the initiation in emulsions as compared with the velocity in the homogeneous systems was observed, the same oil-sol. peroxide compd., namely, benzoyl peroxide, being used as the initiator. This indicates that the mechanism of the decompn. of benzoyl peroxide in a water medium in presence of soaps differs from that in non-polar org. solvents. 21 references. A. Grochowski

4E2C
4E3d
2-MAY
4E4 &

1/1 NS

KHOMIKOVSKIY, P.M.

9

7 4 E 2 C
4 E 2 C
May

The kinetics of copolymerization of vinyl chloride with some unsaturated compounds. G. V. Tkachenko, P. M. Khomikovskii, A. D. Abkin, and S. S. Medvedev. Zhur. Fiz. Khim. 31, 242-9(1957).—The copolymerization velocities of vinyl chloride with *trans*-1,2-dichloroethylene, trichloroethylene, 1- and 2-chloropropene, butadiene, and acetylene in dichloroethane were studied in bulk and in emulsions with 1% BzO_2 and in the absence of air. The reaction velocity was detd. by the method of Tkachenko, *et al.* (*C.A.* 46, 8370i). The copolymerization consts. of the monomers (A for vinyl chloride, B for the unsatd. compds.) and 3 radicals were detd. for butadiene, 1-chloropropene, 2-chloropropene, vinylidene chloride, and dichloroethane, K_{BB} 0.043, 0.025, 0.037, and 0.7[illegible] K_{AB} 28, 0.89, 1.34, and 6; K_{BA} 0.005, 0.1, 0.004, and [illegible], resp. The addn. of small amts. of butadiene or acetylene to vinyl chloride reduced sharply the reaction velocity because of the formation of radicals of [illegible]

KHOMIKOVSKIY, P. M.; YURZHENKO, A. I.,

"The mechanism of emulsion polymerization."

report presented at the Fourth All-Union Conference on Colloidal Chemistry, Tbilisi, Georgian SSR, 12-16 May 1958 (Koll zhur, 20,5, p.677-9, '58, Taubman, A.B)

SOV/81-59-10-37461

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 10, p 577 (USSR)

AUTHORS: Medvedev, S.S., Khomikovskiy, P.M., Sheynker, A.P., Zabolotskaya, Ye.V., Berezhnoy, G.D.

TITLE: The Regularities of Emulsion Polymerization

PERIODICAL: V sb.: Probl. fiz. khimii. Nr 1, Moscow, Goskhimizdat, 1958, pp 5-17

ABSTRACT: A review. There are 13 references.

Card 1/1

AUTHORS: Teplov, B.F., Khomikovskiy, P.M., (Dzerzhinsk) SOV 69-58-4-12/18

TITLE: The Topochemistry of the Drop Polymerization of Vinyl Chloride (O topokhimii kapel'noy polimerizatsii khloristogo vinila)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 4, pp 469-475 (USSR)

ABSTRACT: Two forms of emulsion polymerization are known: 1) polymerization in emulsions stabilized by soaps which takes place in polymer-monomer particles of small size and leads to the formation of latexes; 2) polymerization in emulsions stabilized by protein emulsifiers or high-polymers under the influence of initiators soluble in the monomer. Reliable data on the topochemistry of this polymerization may be obtained by comparing the speeds of the process in water, in the emulsifier solution, and in the emulsion. In the article, the polymerization of vinyl chloride in water and a 2%-solution of photo-gelatine under the influence of the peroxide of benzoyl (PB) and the dinitryl of the azoisobutyric acid (DN) has been investigated. The solubility of PB and DN was determined by stirring these substances in water or gelatine solution. The table shows that PB is practically insoluble in water or gelatine. The solubility of DN in water is considerable. Vinyl chloride is a little more soluble in gelatine than in water. For de-

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The Topochemistry of the Drop Polymerization of Vinyl Chloride

termining the distribution of DN in water and in the monomer, a dichloroethane solution of DN was made. It was found that 92 % of DN is found in dichloroethane and 8 % in water. The polymerization was carried out at 50° C in the absence of air. Figure 2 shows that 1 g of polyvinylchloride absorbs 0.25 g of the monomer. The speed of polymerization with PB is very slow (Figure 3, Curve 1). In the presence of DN, the process takes place with a constant speed after an initial acceleration stage. The size of the particles was determined in every sample of the suspensions in 1,500 - 2,000 particles. The maximum of the distribution curves is found between 15-25 μ. With an increase of the depth of polymerization, an increase of the small particles of 5 μ is observed. Polymerization starts in a molecular water solution containing 0.4 g/l DN and 10 g/l vinyl chloride. In the monomer particles the following reactions are possible: 1) initiation of polymerization by DN-molecules; 2) growth of the chain by the addition of monomer molecules to the primary radicals; 3) breaking of chains; 4) transmission of the chain through the molecules of the monomer and the polymer. As soon as the polymer particles are formed, polymerization takes place in the water solution

The Topochemistry of the Drop Polymerization of Vinyl Chloride

and in polymer particles. The speed of the process in the polymer particles is greater than in water because the monomer concentration is higher and chain breaking is slower. After the accumulation of a certain quantity of polymer, the polymerization speed is constant. This is probably due to the fact that the polymerization takes place completely in the polymer particles. The latex polymerization of vinyl chloride takes place with greater speed than the droplet polymerization. It is not yet known if this is caused by an increase of the initiation speed or by an additional decrease of the chain-breaking speed.
There are 3 graphs, 1 diagram, 1 table, and 19 references, 12 of which are Soviet, 4 English, 1 American, 1 German, and 1 Italian.

SUBMITTED: April 13, 1957

1. Ethylene polymers--Synthesis

Card 3/3

AUTHOR: Khomikovskiy, P. M. (Moscow) SOV/74-27-9-1/5

TITLE: Kinetic and Topochemical Properties of Emulsion Polymerization (Kinetika i topokhimicheskiye osobennosti emul'sionnoy polimerizatsii)

PERIODICAL: Uspekhi khimii, 1958, Vol 27, Nr 9, pp 1025-1055 (USSR)

ABSTRACT: In the beginning the author discusses the general application of emulsion polymerization as well as its advantages, especially in the production of high-molecular substances. Besides the important advantages there are also some disadvantages of emulsion polymerization, e.g. impurification of the emulsion by residues of the emulsifier, which sometimes may make the emulsion polymers unsuitable for use. Usually two groups of substances are used as emulsifiers: the water soluble high-polymers and the surface active substances (of the soap type). In a special chapter the author deals with latex polymerization. The general concepts on the topochemistry of latex polymerization (Refs 27-40) are discussed: the water soluble monomers, as well as monomers, the water solubility of which is not higher than 3%. A third group comprises those monomers which are only weakly soluble in water (Refs 35-39,40)

Kinetic and Topochemical Properties of Emulsion Polymerization

Furthermore the author discusses the kinetics of latex polymerization (Refs 41-46). In a special chapter the author deals with the general kinetic determinents of latex polymerization, e.g. the rate of polymerization, the effect of phase correlation, and the effect of the nature and the concentration of the initiators of the polymerization on the latex polymerization (Refs 55-73). Furthermore the author discusses the effect of the nature and the concentration of the emulsifier (Refs 74,75, 76) and the dependence on the temperature, which especially refers to the rate of polymerization in the emulsion and in the homogeneous systems. The publications of A. I. Yurzhenko (Refs 80,81) are considered in detail. In the last chapter the author deals with the molecular weight of latex polymers (Refs 72,84,90-93) and the influence of the electrolytes (Refs 69,85,97-98,99-100,101-106-119).
Finally the author gives the basic topochemical and kinetic properties of latex polymerization in a short summary.
There are 5 figures, 6 tables, and 119 references, 59 of which are Soviet.

KHOMIKOVSKIY, P.M.

15(6)

AUTHOR: Rebinder, P. A., Academician SOV/30-59-1-5/57

TITLE: New Trends of Colloid Chemistry (Novyye puti razvitiya kolloidnoy khimii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 44-51 (USSR)

ABSTRACT: At present, colloid chemistry plays an especially important part in political economy as it is a physical-chemical science concerning substances of modern engineering. It is of great practical importance that at present it is possible to carry on uninterrupted transitions from lyophobic to lyophilic systems. Thus, it is possible to obtain technically important substances with the required structural-mechanical properties. The theory of highly molecular substances and their solutions has developed into an independent branch of colloid chemistry. The vitality of modern colloid chemistry is proved by the fact that it produces many new independent branches of science. Further, the author describes the course of the 4th All-Union Conference of Colloid Chemistry which took place in Tbilisi on May 13-16, 1958. It was organized by the Otdeleniye khimiches-

V. A. Kargin, Z. Ya. Berestneva described the synthesis of aluminum-silicon jelly of crystalline structure.

V. N. Tsvetkov et al. examined the optical properties of macromolecular solutions and their structural peculiarities.

S. A. Bogdakin and collaborators reported on questions of compatibility of polymers and their solutions.

V. A. Kargin, P. I. Zubov and collaborators discussed the process of gelatin formation and its role in sticking processes.

Yu. M. Lipatov, S. I. Meyerson referred to the coincidental results of thermochemical and dilatometrical examination methods of the transition of gelatine jelly into a liquid solution at a rise in temperature.

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A. I. Yurzhenko and collaborators (L'vov), P. M. Khomikovskiy reported on the clarification of polymerization processes in the state of dispersion.

B. Ya. Yampol'skiy, ..., S. S. Voyutskiy, A. P. Pisarenko and collaborators examined the process of the influence of active fillers on the processes of structural formation of polymers.

A. V. Dumanskiy with his school, A. A. Trapeznikov, G. V. Vinogradov and collaborators examined the properties of soap solutions in connection with their structural peculiarities and the theory of consistent lubricants.

The reports on questions of dispersion systems in polymers showed the utility of a combination of problems of colloid chemistry and the physical chemistry of polymers. The results of the Conference indicate that, besides limited consultations on individual scientific problems, comprehensive congresses are also useful and necessary, uniting the investigators and comprising the results of achievements in wide fields of science. There is 1 Soviet reference.

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... theoretical criteria of spontaneous dispersion of solid bodies, especially metals, in surface-active surroundings.

V. I. Likhtman reported on the appearance of adsorptive plastification of lead and tin at normal temperatures.

L. A. Kozarovitskiy and collaborators examined the influence of rheological properties of printing colors on their behavior in the printing process.

I. N. Vladavets reported on the regulation of crystallization and coagulation structures in the production of best table-butter.

MEZHIROVA, L.P.; YAKOVLEVA, M.K.; MATVEYEVA, A.V.; ABKIN, A.D.; KHOMIKOVSKIY, P.M.; MEDVEDEV, S.S.

Polymerization in emulsions under the action of γ-radiation. Vysokom.soed. 1 no.1:68-72 Ja '59. (MIRA 12:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Polymerization) (Gamma rays)

.5 (3)

AUTHOR: Khomikovskiy, P.M. (Moscow) SOV/74-28-5-3/7

TITLE: Elementary Reactions of the Emulsion Polymerization (Elementarnyye reaktsii emul'sionnoy polimerizatsii)

PERIODICAL: Uspekhi khimii, 1959, Vol 28, Nr 5, pp 547 - 575 (USSR)

ABSTRACT: The present paper investigates in detail the latex- and drop polymerization. The production of polymers by emulsion polymerization - one of the forms of radical polymerization - is more or less thoroughly investigated and its principal possibilities have been applied to practice. In spite of this fact many important problems of the radical polymerization, in particular under heterogeneous conditions, have not yet been solved. Further investigations in this direction are of greatest, not only general, but also practical interest. These investigations entail above all the further research of the characteristics of the elementary reactions. Among the elementary reactions the processes of initiation of polymerization appear to be least investigated. This holds especially for the initiation of polymerization in emulsions and other heterogeneous systems. The mechanism of the initiating effect of hydroperoxides in emulsions is e. g. not clear. The existing data on

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the role of the surface activity of these substances and their solubility in the formation of primary radicals are only a first step on the way towards the solution of the problems of this process. The possibilities of an acceleration of the initiation and regulation of the average molecular weight as well as of the distribution according to molecular weights by means of more active initiators and redox- or other combined initiating systems have by no means been exhausted (Refs 131-133). The initiation of polymerization in emulsions by nuclear radiation (Ref 134) is of great interest and might also have practical importance. The use of nuclear radiation facilitates the clear solution of several problems of the chemical mechanism of latex polymerization. The main characteristic of latex polymerization - high velocity and simultaneous formation of the polymers at high molecular weight - is due to the slowing down of the reaction of chain breaking. This phenomenon may be due to several reasons and is in connection with both the chemical reactions and the physical state of the system. Quantitative investigations of these processes, mainly the dependence of reaction rate and the distribution according to molecular weights on the number and size of particles, on the concentration of the radicals,

on the concentration of the monomers at the place of reaction and the rate of diffusion in viscous polymeric media are not only of general importance but they play also a considerable part in connection with the finding of the conditions of regulation of molecular weights, of the structure and the properties of the latex polymers. The investigation of the conditions necessary for the production of polymers which are insoluble in their monomers and which form during the polymerization in the mass a new phase, is of special interest. The reactions in such "double-heterogeneous" systems exhibit a number of little investigated characteristics. This group implies the monomers that are of special importance to practical use. The application of surface active substances which apart from their emulsifying effect take place in the formation of primary radicals (Ref 135), and as a reducing component of the redox reaction is of considerable practical importance. The problems that have to be subjected to further investigation and which are of direct practical importance are: 1) the regulation of the reaction rate and the molecular weight of polymers by the introduction of electrolytes; 2) production of the latex polymers with inconsiderable content of emulsifier; 3) production of latex polymers with uniform molecular weight according to the principle (Ref

136) that most of the polymeric-monomeric particles contain one polymer radical each. The main difference between latex- and drop polymerization - it is determined by the character of the emulsifier - lies in the fact that the process proceeds mainly in the emulsion drops and is characterized by rules which the polymerization of the monomer concerned possesses in the mass. In practice it is possible to observe in emulsion polymerization cases where in the course of the process the phenomena characteristic of both latex- and drop polymerization occur simultaneously. If in addition to this the process is accompanied by heterogeneous phenomena, the summary effects are extremely complicated. The investigations of such systems are still in the initial stage. There are 3 tables and 137 references, 57 of which are Soviet.

BEREZHNOY, G.D.; KHOMIKOVSKIY, P.M.; MEDVEDEV, S.S.

Kinetics of the emulsion polymerization of styrene. Vysokom. soed. 2 no.1:141-152 Ja '60. (MIRA 13:5)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii i Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Styrene) (Polymerization)

HOMIKOVSKI, P.M. [Khomikovsky, P.M.]; SENATORSKAIA, L.G. [Senatorskaya, L.G.]
SEREBREAKOVA, Z.G. [Serebryakova, Z.G.]

Utilization of surface-active substances in the obtaining and processing of polymers. Analele chimie 15 no.2:50-64 Ap-Je '60. (EEAI 9:11)

(Polymers and polymerization)
(Surface-active substances)
(Emulsions)
(Spot tests (Chemistry))

15.8060
11.2210

25264 S/190/61/003/007/008/021
B101/B220

AUTHORS: Gromov, V. F., Khomikovskiy, P. M., Abkin, A. D.

TITLE: Copolymerization of acryl nitrile and ethylene under the effect of gamma radiation

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 7, 1961 1015 - 1019

TEXT: The copolymerization of ethylene with acryl nitrile (AN) under the effect of gamma radiation of Co^{60}, 20,000 g-equ radium, is studied. The tests were performed at 200C in solution of toluene, the pressure of the ethylene being 10 to 45 kg/cm^2 and the intensity of the dose 30 rad/sec. The ethylene obtained from ethanol contained the following impurities (in mole%): 0.05 propylene, 0.02 butylenes, 0.3 saturated hydrocarbons, 0.14 CO_2, 0.01 O_2. The AN had a boiling point amounting to 77.5 - 78.5°C. The polymerization was effected in steel ampullae with magnetic mixer. The ampullae were filled with AN dissolved in toluene, liberated from air by freezing and thawing in vacuum, and saturated with

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ethylene under the above-mentioned pressure. The polymer suspensions obtained were rinsed with methanol, dried in vacuum, and then their content in nitrogen as well as their viscosity in dimethyl formamide at 26°C and with a concentration of the polymer of 0.35 to 0.75 g/dl. were determined. Data obtained: 1) for molar ratios of ethylene: AN = 0.1:0.9 and 0.5:0.5 the yield of polymer is linearly dependent on the time of polymerization required to achieve a 40% conversion. For a ratio of 0.7:0.3 the rate of polymerization increases up to 25% conversion and then decreases; 2) the intrinsic viscosity of the polymers increases with the degree of conversion; 3) with long radiation (about 20 hr and more) and a molar part of the AN >0.5 the polymers become insoluble due to cross linking; 4) the rate of polymerization increases with increasing concentration of the AN; 5) for all ratios the polymer contains relatively more AN than the initial mixture. In the range of concentrations of the AN from 0.1 - 1.0 molar parts, the equation $y = 0.718 + 0.046x + 0.0019x^2$ holds, wherein x is the content of AN in the initial mixture and y the content of AN in the polymer; 6) the calculated constants of copolymerization are: $r_{1(AN)} = 7$, $r_2 \approx 0$. r_1 de-

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creases, however, if the content in AN exceeds 0.7 molar parts; 7) the following constants were calculated for the copolymerization of ethylene with CO, based on the data given by M. Brubaker et al. (see below): $r_{2(CO)} = 0.25$; $r_{2(C_2H_4)} = 0.57$. G. S. Kolesnikov, A. P. Sunrun, and T A. Soboleva are mentioned. There are 7 figures, 2 tables and 10 references: 5 Soviet-bloc, and 5 non Soviet-bloc. The most important references to English-language publications read as follows: M. Brubaker, D. Coffman, H. Hoehn, J. Amer. Chem. Soc. 74, 1509, 1952; W. Kay, Industr. and Engng. Chem. 40, 1459, 1948.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute im. L. Ya. Karpov)

SUBMITTED: September 20, 1960

Card 3/3

GROMOV, V.F.; KHOMIKOVSKIY, P.M.; ABKIN, A.D.

Gamma-ray induced copolymerization of acrylonitrile and ethylene. Vysokom.soed. 3 no.7:1015-1019 Jl '61. (MIRA 14:6)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Acrylonitrile) (Ethylene) (Polymerization)

S/190/6[illegible]/003/012/008/012
B124/B180

AUTHORS: Berezhnoy, G. D., Khomikovskiy, P. M., Medvedev, S. S.

TITLE: Study of the emulsion (later) polymerization of styrene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 12, 1963, 1839-1846

TEXT: The polymerization of styrene is studied in emulsions stabilized with the emulsifier MK (MK) (a mixture of C_{12} to C_{18} alkyl sulfonates with the average composition $C_{15}H_{31}SO_3Na$) and sodium laurate (SL). Polymerization was initiated by potassium persulfate (PP), azoisobutyrodinitrile (DN), and benzoyl peroxide (BP). The methods used to determine the polymerization rate (v) and the mean polymerization degree (P_n) had been described by the authors in Ref. 1 (Vysokomolek. soyed. 2, 141, 1960). All polymerization experiments were performed at 50°C, using a volume ratio of monomer to emulsifier solution = 1:3. The polymerization rate is given in grams of polymer per 100 milliliters of aqueous phase per minute. The

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Study of the emulsion (latex)...

dependence of r and P_n on the concentrations of PP (Fig. 1) and DN (Fig. 2) at constant SL concentration, and the effect of the SL concentration on r and P_n at constant PP concentration (Fig. 3) were investigated. The effect of the concentration of the emulsifier MK on r and P_n at variable DN concentration is illustrated in Fig. 4. The number of polymer monomer particles (PMP) and their total surface area (S_{total}) per unit volume of latex increases with rising emulsifier concentration, whereas the mean PMP diameter decreases with rising concentration of the emulsifier. The total surface area of PMP does not vary with the conversion degree, while the increase of chain mean diameter with the conversion degree is nearly linear. At constant concentration of the emulsifier MK (1 and 3 %, respectively), the total surface area of PMP and their diameter remain unchanged even if the initiator concentration is increased by a factor of 40. When PF is used, S_{total} of PMP is proportional to the square root of MK concentration. Hence, the relation between r and S_{total} is linear. The same holds for DN. The degree of unsaturation of PMP decreases nearly

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Study of the emulsion (later)...

with increasing emulsifier concentration, and does not vary with the conversion degree provided the emulsifier concentration is kept constant Assuming that termination takes place by the interaction of two polymer radicals, the equation: $P_n = c_{tot}[S]^{0.5}/[I]^{0.5}$ (1) holds for PP, and the equation $P_n = c_{tot}/(I)^{0.5}$ (2) for DN and BP, where [S] is the emulsifier concentration in the aqueous phase, [I] is the initiator concentration in the aqueous phase, and (I) is the initiator concentration in the adsorptive layers of the emulsifer. At high initiator concentrations, a deviation from the above-mentioned relationship was observed. The woman-students N. Petukhova and I. Korobanova participated in the work. T. Krishan (Ref. 8: Candidate Dissertation, Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov), 1959) is mentioned. There are 7 figures, 2 tables, and 12 references: 9 Soviet-bloc and 3 non-Soviet-bloc The three references to English-language publications read as follows: E. Wilson, J. Miller, E. Rowe, J. Phys. Chem., 53, 357, 1949; S. Maron, M. Elder, J. Ulevitsh, J. Colloid Sci., 9, 89, 263, 374, 1954;

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Study of the emulsion (latex)...

S/190/61/003/012/008/012
B124/B101

E. Cockbain, Trans. Inst. Rubber Ind., 28, 297, 1952

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Technology) Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: January 14, 1960

Fig. 1. Effect of the PP concentration [I] on v and P_n. SL (2 % of the aqueous phase) is used as an emulsifier: (1) according to the equation $v = c[I]^{1/2}$; (2) according to the equation $P_n = c_{tot}[S]^{1/2}/[I]^{1/2}$.

Fig. 2. Effect of the DN concentration on v and P_n. SL (2 %) is used as an emulsifier: (1) according to the equation $v = c[I]^{1/2}$; (2) according to the equation $P_n = c_{tot}/[I]^{1/2}$.

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4

15.9201 1372, 1436, 1474 29761
11.2211 S/190/61/003/011/013/016
B110/B147

AUTHORS: Ushakov, V. D., Mezhirova, L. P., Galata, L. A., Kontyuk, A. G., Khusnutdinova, Z. S., Medvedev, S. S., Abkin, A. D., Khomikovskiy, P. M.

TITLE: Polymerization of styrene and butadiene with styrene in emulsions under the action of initiating redox systems. I. Effect of the nature of peroxide compounds on the rate of polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961, 1716-1722

TEXT: Aim of the present work was the determination of the most active initiating redox systems for the polymerization of butadiene with styrene in emulsions, and especially of the effect of the nature of peroxides on the rate of polymerization. Nekal with 20 % of Na_2SO_4 and NaCl and mersolate (mixture of Na salts of sulfonic acids of the aliphatic series: $C_{15}H_{31}SO_3Na$) with ≤ 5 % of NaCl served as emulsifiers. Peroxides were used

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Polymerization of styrene and...

as oxidants (Table). Potassium ferrocyanide and ferrous pyrophosphate complex (IV) served as reducing agents. The rate of polymerization was determined either dilatometrically or from the yield of polymer (in ampuls). Polymerization took place at 5°C with an excess of butadiene, styrene with peroxides dissolved in it (10 % solution), and the calculated amount of emulsifier solution. A suspension of the ferrous pyrophosphate complex was added at a certain temperature by means of medical syringes. Substances used: (1) mersolate (3 % by weight added to water, ratio monomer : emulsifier 1 : 3); (2) potassium ferrocyanide. The temperature was varied between 0 and 50°C. Seven peroxides were investigated in amounts equivalent to 0.02 and 0.1 % by weight of isopropyl benzene hydroperoxide. $K_4Fe(CN)_6$ was used in concentrations equimolecular to hydroperoxide. P-tert-butyl isopropyl benzene hydroperoxide (I) had the optimum rate of polymerization; that of ethyl isopropyl benzene peroxide, isopropyl benzene- (II), and ethyl benzene hydroperoxide was lower, that of dibenzyl hydroperoxide still lower, and that of benzoyl peroxide the lowest. Polymerization with H_2O_2 proceeds fast at the beginning, then it decreases strongly, since H_2O_2 and the reducing agent are readily soluble in water. With 0.2-0.5 % by weight

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Polymerization of styrene and...

of II, only the initial rate increases. The total yield is lower than with 0.1 % by weight of II. Between 0.75 and 1 % by weight of II, initial rates and total yield are much lower. With 0.02-0.2 % by weight of I, initial rates increase. Since the total rate decreases at 0.2 % by weight, the dependence of the reaction rate on the hydroperoxide concentration is probably linked with the inhibiting effect of the decomposition products of hydroperoxide. With 0.1 % by weight of I and an equimolecular amount of $K_4Fe(CN)_6$, both total yield and initial rate increased with increasing temperature. The activation energies were determined according to the Arrhenius equation and found to be: E = 8.6 kcal/mole for II and E = 5.7 kcal/mole for I. Reduction of E by 3 kcal/mole at $\sim 0^oC$ corresponds to a 200-fold increase of the reaction rate. Since the rate is twice as high at 0°C, the pre-exponential factor in the Arrhenius equation increases by 10^2 times with decreasing activation energy of I. For the copolymerization of butadiene with styrene (ratio 70 : 30) at 5°C, the following was used: Nekal (2.8 and 1.4 % by weight added to water). 0.44 % by weight of ferropyrophosphate (related to iron sulfate) of the monomer. The ratio organic phase : aqueous phase was 1 : 4 (by weight). In the case of 0.34 %

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by weight of hydroperoxide of II (equimolar ratio to the monomer) optimum rate was achieved with IV. The highest yield was achieved with aryl-alkyl hydroperoxides (I and 1,1-diphenyl ethane hydroperoxide (III)) (Table). With an emulsifier concentration of 2.8 %, maximum conversion (70-75 %) was achieved after 2 hr with 0.2 % by weight of I and with 0.3 % by weight of III. With 0.34 % by weight of II, optimum conversion (~30 %) was achieved after 2 hr. Polymerization of I and IV with 1.4 or 2.8 % by weight of emulsifier was constant up to 30 % conversion, then the rate dropped. With 1.4 % by weight, the initial rate was lower and the decrease more distinct. With an addition of 0.1 % by weight of hydroperoxide +0.26 % by weight of IV (after 1 hr new addition of 0.1 % by weight of hydroperoxide and 0.18 % by weight of IV), constant polymerization took place up to 60 % conversion. Thus, the consumption of the initiating system causes a decrease in rate. The efficiency of redox systems and initiators depends on the reactivity of the radical as well as on the solubility of the peroxide compounds in the aqueous phase and in the monomers. The lower the solubility in water, the lower the loss and the stronger the initiating action. I + IV cause a higher rate of reaction than II + IV due to lower activation energy and lower solubility in water. For II + IV, the redox reaction occurs at the

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Polymerization of styrene and...

phase boundary, for I + IV also in the aqueous phase. The existence of a maximum of the rate of polymerization for I and butyl isopropyl hydroperoxide is caused by polymerization inhibition due to the decomposition products of the hydroperoxides. The authors thank A. G. Pod"yapol'ska for help with experiments and T. I. Yurzhenko (L'vovskiy industrial'nyy institut (L'vov Industrial Institute)) for supplying some hydroperoxides. There are 5 figures, 1 table, and 7 references: 4 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: F. A. Bovey, I. M. Kolthoff, Emulsion Polymerization, New York, 1955; C. F. Fryling, Industr. and Engng. Chem., 41, 986, 1949.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: December 28, 1960

Card 5/7

15 9201 13 72, 1416, 1474

2742
S/190/61/003/011/014/016
B110/B147

11.2211

AUTHORS: Ushakov, V. D., Mezhirova, L. P., Galata, L. A., Khusnutdinova, Z. S., Sheynker, A. P., Medvedev, S. S., Abkin, A. D., Khomikovskiy, P. M.

TITLE: Polymerization of styrene and butadiene with styrene in emulsions under the action of initiating redox systems. IL Effect of the nature of the reducing agent on the rate of polymerization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961, 1723-1739

TEXT: The effect of the reducing component of initiating systems and of the addition of a second reducing agent on the rate of polymerization is studied. Used were systems of hydroperoxides (HP) of isopropyl benzene (I) or p-tert-butyl isopropyl benzene (II) with ferropyrophosphate complex (III), potassium ferrocyanide (IV), ferrous sulfate with o-phenanthroline, or of complexes of α,α-dipyridyl with ferrous oxalate. Sodium bisulfite and the bisulfite compound of acetone served as reducing

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B110/B147

Polymerization of styrene and...

agents (without metals of variable valency). Monoethanolamine, dioxyacetone (V), sodium bisulfite, and the bisulfite compound of acetone were additional reducing agents. Their effect was investigated with systems of the II of different initiating activity and two complex compounds of bivalent iron. The ratio hydrocarbons (70 % by weight of styrene : 30 % by weight of butadiene) : water was 1 : 4. 2.8 % by weight of emulsifier (Nekal, Mersolate) were used. Optimum rate of polymerization was established at 0.54 % by weight of HP I and 0.2 % by weight of HP II (related to monomer). At the copolymerization butadiene-styrene by means of HP I + III, the optimum rate of polymerization was established for $FeSO_4 \cdot 7H_2O$ and $Na_4P_2O_7 \cdot 10H_2O$ = 0.75 : 1. Increase of the concentration of III from 0.55 to 0.70 moles/mole of HP I accelerates the process considerably. After 4 hr, the polymer yield increases to ~ 48 % at an increase of III from 0.2-0.35 moles/mole of hydrogen peroxide, and to 65 % at a further increase. At 5°C, additional reducing agents hardly affect the rate of polymerization. At 20°C, addition of V to I + III causes polymerization acceleration and 75 % monomer conversion after 5 hr, which is only 40 % without V. In the system II and III, optimum polymer yield is achieved at 1.5 moles of III per mole of HP II. For IV, an optimum yield

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29742
S/190/61/003/011/014/016
B110/B147

Polymerization of styrene and...

is achieved after 4 hr at a ratio 0.5 IV : 1 HP. The high rate of polymerization for systems with III is caused by the low solubility of III in water. The redox potential of III is -200 mv. In dissolved state, it reacts with HP, but dissolves only slowly. This causes the great depth of conversion. IV with high positive potential (420 mv) is soluble in water. The rate of initiating is determined by interaction of HP with I. Polymerization is not initiated during the unproductive reaction of well soluble $NaHSO_3$ and well soluble HP I. $NaHSO_3$ and poorly soluble HP II initiate polymerization. The effect of IV on III at 30°C consists in the regeneration of the Fe^{2+} from the Fe^{3+} ions, whereby the depth of conversion increases. There are 3 figures and 7 references: 5 Soviet and 2 non-Soviet. The most recent references to English-language [illegible] follow: T. Hall, T. Svoboda, J. Amer. Chem. [illegible] 12, 1,475; C. [illegible] Reyling, Industr. and Engng Chem., 41, 986, 1949.

[illegible] Physicochemical Institute im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

[illegible] December 2, 1960

BEREZHNOY, G.D.; KHOMIKOVSKIY, P.M.; MEDVEDEV, S.S.; Prinimali uchastiye: PETUKHOVA, N., studentka; KOROBANOVA, I., studentka

Study of the emulsion (latex) polymerization of styrene. Vysokom.-soed. 3 no.12:1839-1846 D '61. (MIRA 15:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii, i Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Styrene) (Polymerization)

MEDVEDEV, S.S.; KHOMIKOVSKIY, P.M.; SHEYNKER, A.P.; ZABOLOTSKAYA, Ye.V.; BEREZHNOY, G.D.

Some laws governing emulsion polymerization. Probl.fiz.khim. no.1:5-17 '58. (MIRA 15:11)

1. Laboratoriya polimerizatsionnykh protsessov Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta im. Karpova.
(Polymerization) (Emulsions)

S/190/63/005/004/002/020
B101/B220

AUTHORS: Gerasimov, G. N., Abkin, A. D., Khomikovskiy, P. M.

TITLE: Mechanism of heterogeneous polymerization of ethylene under the effect of ionizing radiations

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 479-486

TEXT: A method was developed for determining the diffusion coefficient of ethylene in polyethylene by plotting the desorption curve, after the polyethylene had been previously saturated under pressure (up to 200 atm) with ethylene. The desorption-induced change in weight of the polyethylene was measured. The diffusion coefficient was at 25°C ~3.5, at 38°C ~6.0, at 50°C ~9.0. The solubility of ethylene in polyethylene is proportional to its volatility, and with constant volatility independent of the temperature. With constant temperature, the diffusion coefficient is independent of the solubility of ethylene. The specific surface and the pore diameter of the polyethylene was determined with crypton by the method of A. Zettlemover, A. Chanda, E. Gambble (J. Amer. Chem. Soc., 72, 2752, 1950). The specific surface was dependent on the conditions of polymerization; it was (m^2/g):20.2 with a dose of 62 r/sec, 300 atm, 70°C, irradiation time 10 hr;
Card 1/2

Mechanism of heterogeneous ...

33.2 at 141/r sec, 400 atm, 25°C, 6 hr; and 18.0 at 141 r/sec, 400 atm, 25°C, 12 hr. Assuming cylindrical pores their internal diameter r_o and wall thickness d are calculated: $r_o = 1.66 \cdot 10^{-5}$ cm, $d = 6.32 \cdot 10^{-5}$ - $1.69 \cdot 10^{-5}$ cm. Based on the cylindrical model and using the method of J. Cranc (Mathematics of Diffusion, Oxford Univ. Press, London, 1957), a rate of ethylene addition at the radicals inside the polymer of 23.2 g/l·sec was found, whereas the experimental data vary between 8.5 and 45.0 g/l·hr. This difference is explained by the fact that the concentration of the reactive radicals inside the polymer is less than 10^{-3} mole/l. From the proportionality between rate of polymerization and specific surface it is concluded that the reactive radicals are mainly at the surface of the polymer. There are 4 figures and 3 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: November 5, 1961

Card 2/2

AID Nr. 993-6 19 June

RADIATION POLYMERIZATION OF TETRAFLUOROETHYLENE IN THE SOLID STATE (USSR)

Bruk, M. A., A. D. Abkin, and P. M. Khomikovskiy. IN: Akademiya nauk SSSR. Doklady, v. 149, no. 6, 21 Apr 1963, 1322-1325.
S/020/63/149/006/014/027

The radiation polymerization of tetrafluoroethylene (TFE) in the solid state has been studied at the Physicochemical Institute imeni L. Yu. Karpov.. Specimens of pure TFE were frozen by immersion in liquid nitrogen and irradiated from a Co^{60} source with an activity of 60,000 g-equiv of Ra or from an electron accelerator with an energy of 1.5 Mev. The yield of the polymers was determined gravimetrically following fast defreezing of irradiated specimens. The EPR spectra were recroded with the use of РЭ-1301 type devices; the absolute concentrations of radicals were evaluated by comparison of the signal areas of the sample and of a standard with

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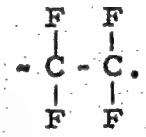
RADIATION POLYMERIZATION [Cont'd] S/020/63/149/006/014/027

a known concentration of paramagnetic particles. It was shown that 1) the initial polymerization rate of TFE in the solid state increases with temperature, attains a maximum near the melting point, and drops sharply after melting; 2) the total activation energy of polymerization is 0.6 kcal/mol in the -196 to -155°C range and 1.6 kcal/mol at -155 to -131°C; 3) rapid annihilation of radicals takes place in the -180 to -140°C range and in the -80 to -50°C range; and 4) the character of the radical annihilation and changes in the EPR spectra observed at low temperatures suggest that these spectra are associated with the radical formed in the monomer, and the spectra observed at -150°C and above, to the radical in the polymer. Finally, it is assumed that the polymer radical has the structure



and is formed in the system as a result of the growth of the polymer chain.

[BAO]

ACCESSION NR: AP4012181 S/0191/64/000/002/0003/0006

AUTHORS: Abkin, A. D.; Auer, A. L.; Breger, A. Kh.; Vaynshteyn, B. I.; Voropayev, Yu. V.; Gol'din, V. A.; Gromov, V. F.; Osipov, V. B.; Sy*rkus, N. P.; Ushakov, V. D.; Khomikovskiy, P. M.; Tsingister, V. A.; Chikin, Yu. A.

TITLE: Radiation polymerization of ethylene in enlarged laboratory apparatus.

SOURCE: Plasticheskiye massy*, no. 2, 1964, 3-6

TOPIC TAGS: ethylene, radiation polymerization, reactor design, reactor surface area, reaction rate, polymer yield, reactor temperature field

ABSTRACT: Radiation polymerization of ethylene was conducted in laboratory reactors of 1-2 liter capacity (fig. 1 & 2). Based on tolerances admitted in this work, it was found that the temperature field can be calculated with sufficient accuracy. Comparison of reaction rates and yield of ethylene polymer shows that these factors are independent of the specific surface of the reaction space. Thus

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ACCESSION NR: AP4012181

commercial scale apparatus can be designed by estimating the process rate and yield dependence on pressure, temperature and dosage rate without concern for specific surface area of the reactor. Orig. art. has: 1 Table and 5 Figures

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 26Feb64 ENCL: 02

SUB CODE: MA NR REF SOV: 005 OTHER: 003

Card 2/2

BEREZHNOY, G.D.; KHOMIKOVSKIY, P.M.; MEDVEDEV, S.S.; POLUYAN, I.V.

Effect of the addition of emulsifying agents on the course of the emulsion polymerization of styrene. Vysokom. soed. 6 no. 5:891-895 My '64. (MIRA 17:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova i Fiziko-khimicheskiy institut imeni Karpova.

L 14506-65 ENG(j)/EWT(m)/EPF(n)-2/EMP(j)/T/EWA(h)/EWA(1) Pc-4/Pr-4/Peb/
Pu-4 ASD(a)-5/ASD(m)-3/AS(mp)-2/AFETR/ESD(gs)/ESD(t) GG/RM

ACCESSION NR: AP4048201 S/0191/64/000/011/0013/0014

AUTHOR: Gromov, V. F., Khomikovskiy, P. M., Abkin, A. D.

TITLE: Effect of the addition of saturated hydrocarbons on the radiation polymerization of ethylene

SOURCE: Plasticheskiye massy*, no. 11, 1964, 13-14

TOPIC TAGS: radiation polymerization, ethylene, saturated hydrocarbon, polymer strength, polyethylene, Gamma radiation

ABSTRACT: The production of soluble polyethylene with satisfactory mechanical properties by radiation polymerization in the presence of low-molecular saturated hydrocarbons was investigated. Heptane and cyclohexane were used as additives and Co^{60} as a radiation source. The experiment was carried out at 20C and 400 atm. with 3-24% by weight of heptane and a radiation dose of 65 rad./sec. The effect of the heptane content on the rate of polymerization and the molecular weight and properties of the resulting polymers was studied. Tabulated data show that for the same ethylene concentrations, increasing the heptane concentration increases the rate of polymerization considerably (especially at more than 6% heptane) and decreases the molecular weight (intrinsic

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L 14506-65

ACCESSION NR: AP4048201

viscosity). The variation in the polymer yield with irradiation time at 9.0-9.7% heptane content is plotted. In the presence of heptane, completely soluble polymers are obtained up to a degree of conversion of 70-80%, while radiation polyethylene prepared without additives contains insoluble fractions at a degree of conversion of only 30-50% and has a very low fluidity. The tensile strength depends slightly on the heptane concentration and remains in the range of 170-246 kg/cm^2. The elongation at break is increased by an average of 600-700% as the heptane content increases from 3-10% by weight, but decreases considerable above 11-23% heptane. At about 10% heptane, the density is 0.96 and does not differ from that of polyethylene prepared without additives. Concerning the effect of cyclohexane, the best properties were obtained at 6.5% cyclohexane in the initial mixture. The radiation polymerization of ethylene is accompanied by the radiolysis of the polymer, which leads to the formation of branched and cross-linked polymers. Radiation polyethylene has a higher density and crystallinity than the low-pressure polyethylene. It was found that, in order to reduce the reactions leading to cross-linking during the radiation polymerization of ethylene, low-molecular saturated hydrocarbons in an amount of 5-10% are very effective additives, resulting in polymers with good mechanical and flow properties. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: None

Card 2/3

L 14506-65

ACCESSION NR: AP4048201

SUBMITTED: 00 ENCL: 00 SUB CODE: OC

NO REF SOV: 002 OTHER: 001

3/3

Card

ACCESSION NR: AP4040956 S/0020/64/156/005/1150/1153

AUTHOR: Gerasimov, G. N., Khomikovskiy, P. M., Abkin, A. D.

TITLE: Ethylene radiation polymerization mechanism

SOURCE: AN SSSR. Dorklady*, v. 156, no. 5, 1964, 1150-1153

TOPIC TAGS: ethylene, ethylene polymerization, alkyl radical, polyethylene, EPR, EPR spectrum, trans-vinyl bond, polymer

ABSTRACT: Radiation polymerization of ethylene at temperatures below the polymer's melting point is characterized by the fact that the reaction rate is increased at the beginning of the process, attains a maximum and then decreases. This observed effect is not associated with a change in the gaseous phase composition but is determined by the accumulation of the solid polymer. The present work is a study of the kinetics of radiation polymerization of ethylene with the help of a specially-designed dilatometer in which the reaction rate was measured under rigidly constant pressure. The dilatometer design is to be described in a special article. Ethylene whose composition was given by S. S. Medvedev et al (Vysokomolek. soyed. 2, (1960), 904) was used in the experiment. The polymerization was carried out on a K-60000 gamma radiation source at 100-250 at.,

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ACCESSION NR: AP4040956

25-55C temperature and dosage rate (I) of 9 rad/sec. The kinetic curves are characterized by a rate maximum W_{max}. The radiation polymerization of ethylene can proceed in the gaseous phase and in the solid polymer owing to the dissolved ethylene contained in the polymer. Experiment shows that the life period of radiation polyethylene radicals at room temperature coincides by order of magnitude with the dark reaction period. The radicals have a heptacomponent EPR spectrum which is characteristic of allyl radicals. The cocrystallization of the radicals with the polymer radicals takes place very rapidly. The concentration of the radicals in the gaseous phase is extremely low and can be disregarded through the interaction of these radicals with the radicals in the polymer. The overall change in polymerization rate depends to a large degree upon the probability of the radical transition between individual areas of the solid polymer. Two models of polymerization were examined: (1) the polymer is a homogeneous system, and (2) the polymer is a collection of noureacting homogeneous areas which are formed at diverse times. The polymer in the initial stage is formed in the shape of a charged and highly-dispersed aerosol, i. e. the second model is realized. The particle size of the polymer decreases strongly with degree of conversion and the "consequence" of the first model grows. Mathematical analysis shows that the first model is characterized by a rate maximum, but that the period for attaining this maximum is much less than

Card 2/3

ACCESSION NR: AP4040956

that observed experimentally. According to the second model, the polymerization rate should grow without interruption with accumulation of the solid polymer. The polymerization rate will be reduced with decrease in polymer particle size. Hence, the experimental kinetic curve will lie between the kinetic curves for the first andsecond models. Orig. art. has: 4 figures, 1 table and 2 equations.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physics and Chemical Institute)

SUBMITTED: 25Nov63

ENCL: 00

SUB CODE: OC, OP

NO REF SOV: 006

OTHER: 007

Card 3/3

L 21068-65 EPF(c)/EPF(n)-2/EPR/EWG(j)/EWA(h)/EWP(j)/EWT(m)/T/EWA(1) Pc-4/
Pr-4/Ps-4/Pu-4/Peb RPL/AFWL/ASD(m)-3/AS(mp)-2/ESD(gs) GG/RM/WH
ACCESSION NR: AP4044881 S/0020/64/157/006/1399/1402

AUTHOR: Bruk, M. A.; Abkin, A. D.; Khomikovskiy, P. M.; Gol'der, G. A.; Chu-Hsiang-ling

TITLE: Certain questions about the radiation polymerization and copolymerization of tetrafluoroethylene in the solid state

SOURCE: AN SSSR. Doklady*, v. 157, no. 6, 1964, 1399-1402

TOPIC TAGS: radiation polymerization, solid state radiation polymerization, polymerization mechanism, tetrafluoroethylene, tetrafluoroethylene trifluorochloroethylene copolymer, lumineacence, radical mechanism, ionic mechanism

ABSTRACT: The solid state radiation polymerization of tetrafluoroethylene (TFE) and its radiation copolymerization with trifluorochloroethylene (TFCE) was investigated in order to determine the mechanism of the polymerization reaction. The temperature-polymerization rate curve showed a maximum at -131C, near the monomer melting temperature, and an additional maximum at -160 to -165C, where destruction of radicals, stabilized at lower temperatures, starts. X-rays

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showed no structural change in the -196 to -155 C range, hence the effect at -165 was attributed to the release in the molecular motion in the TFE crystal lattice. By examination of temperature relationships it was also established that the intensity of luminescence was not determined by the destruction of radicals. TFE and TFCE were copolymerized in the gas and liquid phases and in the solid state. In the gas and liquid phase gamma-radiation copolymerizations the product composition was proportional to that of the initial mixtures, i.e., the copolymerization constants were equal to 1. Solid state radiation polymerization was conducted with mixtures containing up to about 60% TFCE which are single phase solid solutions stable to -170C and higher. The copolymers produced at -145 and at -170C using up to 50% TFCE were all greatly enriched in TFE; the copolymerization constants: r_1 (TFE) = 25; r_2 (TFCE) = 0.04. Pure solid (crystalline or amorphous), or liquid (-120C)TFCE could not be polymerized. Addition of a small amount, 1% , of TFCE to TFE sharply reduced the yield of the polymer. It was concluded the radical mechanism of the gas and liquid phase polymerizations did not obtain for the solid state radiation polymerization; the mechanism of the latter was apparently ionic. "The thermoluminescence curve was obtained by V. A. Tochin in the Institute of Chemical Physics AN SSSR." Orig. art. has:

L 21068-65

ACCESSION NR: AP4044881

4 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 02Mar64 ENCL: 00

SUB CODE: GC NO REF SOV: 003 OTHER: 001

Card 3/3

USHAKOV, V.D.; MATVEYEVA, A.V.; SLOVOKHOTOVA, N.A.; KHOMIKOVSKIY, P.M.; ABKIN, A.D.

Radiation polymerization of diketone in the solid and liquid states. Vysokom.soed. 7 no.7:1165-1170 Jl '65.

(MIRA 18:8)

1. Fiziko-khimicheskiy institut imeni Karpova.

L 26138-66 EWT(m)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l) IJP(c) WW/GC/RM

ACC NR: AP6015061 (A) SOURCE CODE: UR/0190/66/008/005/0961/0962

AUTHOR: Bruk, M. A.; Gromov, V. F.; Chernyak, I. V.; Khomikovskiy, P. M.; Abkin, A. D.

ORG: None

TITLE: Radiation-induced polymerization of tetrafluoroethylene and acrylonitrile at 4.2 K

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 5, 1966, 961-962

TOPIC TAGS: tetrafluorothylene, acrylonitrile, bulk polymerization, low temperature polymerization

ABSTRACT: Polymers of tetrafluoroethylene or acrylonitrile have been prepared by bulk radiation-induced polymerization of the monomers at 4.2 K. Molten monomer samples were frozen at a given rate in liquid nitrogen, placed in a cryostat with liquid helium, and irradiated. Defrosting of the samples was conducted under conditions which excluded post-polymerization. The authors assume that in the course of polymerization of the monomers at low temperatures the bulk temperature of the samples does not determine the character of the polymer chain formation, which takes place in "hot" regions. The polymer chains grow before relaxation of the vibration excitation of molecules in "hot" regions has time to occur. The authors also assume that polymerization follows the cooperative mechanism which does not require activation for the addition of individual monomer molecules. Orig. art. has: 1 figure. [BO]

SUB CODE: 07, 11/ SUBM DATE: 06Jan66/ ORIG REF: 003/ OTH REF: 001/ ATD PRESS: 4251

Card 1/1

L 4289-66 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l) RPL WW/GG/RM

ACCESSION NR: AP5024006 UR/0020/65/164/002/0365/0367

AUTHOR: Gerasimov, G. N.; Sabirova, T. M.; Khomikovskiy, P. M.; Abkin, A. D.

TITLE: Radiation polymerization of vinyl chloride in solid solutions at low temperatures

SOURCE: AN SSSR. Doklady, v. 164, no. 2, 1965, 365-367

TOPIC TAGS: vinyl chloride, radiation polymerization, mineral oil, solid solution

ABSTRACT: The polymerization of vinyl chloride was carried out in mineral oil at a dose rate of 70 rad/sec (Co^{60}) and temperatures of -78 and -196C, i.e., above and below the melting point of vinyl chloride. Considerable postpolymerization was found to take place during thawing of the solutions, so that the latter was carried out very rapidly when kinetic data were taken. The kinetic curves obtained show that at -196C the reaction rate decreases sharply during the first stage, and the polymerization practically ceases at 15 - 20% conversion; the yield of polymer becomes markedly reduced when the vinyl chloride content increases from 6 to 15%. At -78C, the reaction rate increases sharply at first, then reaches a maximum, and declines rapidly at 50 - 60% conversion. The products formed are low-molecular polymers. It is postulated on the basis of the kinetic data that the polymerization of vinyl chloride in a solid mineral oil solution is determined by a

Card 1/2

L 4289-66
ACCESSION NR: AP5024006

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definite ordered arrangement of vinyl chloride molecules. The structure of the frozen systems also affects the polymerization process. In contrast to amorphous solutions of vinyl chloride in low-molecular paraffins, the solid system vinyl chloride-mineral oil is a microheterogeneous one; in the presence of microheterogeneity, significant kinetic effects can take place. Orig. art. has: 2 figures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physiochemical Institute)

SUBMITTED: 10Dec64 ENCL: 00 SUB CODE: MT GC

NO REF SOV: 001 OTHER: 005

Card 2/2

CA

KHOMINSKIY, B.S.

Histochemistry of lipides in destructive processes of central nervous system. B. S. Khominskii. *Arkh. Patol., S.S.S.R.* 9, No. 5, 35-45(1947).—A histochem. study was made of 10 cases of Wallerian degeneration of the spinal cord and cerebrum resulting from compression due to tumors or trauma; similar data were obtained in 2 cases each of tabes dorsalis, ergotism, and amyotrophic lateral sclerosis, and in 4 cases of multiple sclerosis with numerous foci in the cerebrum and spinal cord. A new term, "destructive-resorptive steatosis," is suggested to characterize the destruction of nervous tissue and the transformation of lipide substances in the bodies of glial cells. The process is described in 6 consecutive stages; it is mainly characterized as cholesterol ester fatty degeneration. In the early stages a splitting up of the glycerophosphatides occurs; other phosphatides and cerebrosides are disintegrated in the later stages. B. A.

KHOMINSKIY, B.S.

KHOMINSKIY B.S.

O roli razlichnykh vidov glii v protsesse pererabotki lipoidnykh produktov raspada. [Role of various kinds of glia in the process of metabolism of lipoid products of disintegration.] Arkh. pat., Moskva 12:4 July-Aug 50 p.36-44.

1. Of the Department of Pathomorphology (Head -- Prof. B. S. Khominskiy), Kiev Psychoneurological Institute (Director -- Dr. P. S. Tarasenko; Scientific Director -- of the Institute-- Active Member of the Academy of Medical Sciences USSR -- B. N. Man'kovskiy), Kiev.

CLML 19, 5, Nov 50

KHOMINSKIY, B.S.

Problems of origin and pathomorphological diagnosis of gliomas. Arkh. pat., Moskva 14 no.3:57-69 May-June 1952. (CLML 23:2)

1. Of the Department of Pathomorphology (Head -- Prof. B. S. Khominskiy), Institute of Neurosurgery (Director -- Prof. A. I. Arutyunov), Ministry of Public Health Ukrainian SSR.

U-7

USSR / General Problems of Pathology. Tumors.
Comparative Oncology. Tumors in Humans.

Abs Jour: Ref Zhur-Biol., No 15, 1958, 70932.

Author : Khominskiy B. S., Brodskaya I. A.
Inst : Not given.
Title : Pathological Morphology of Glial Tumors in the Large Hemispheres.

Orig Pub: Tr. Vseross. nauch-prak konferentsii neyrokhirurgov, 1953 i 1954. Leningrad, Medgiz, 1956, 270-274.

Abstract: Working on sectioned material, and by means of varied histological methods, a detailed study was made of 160 glial tumors of the large hemispheres. Prevalent were 136 glioblastoma, mostly polymorphous rather than isomorphous. Of the 18 astrocytes, one half of this number could be considered

Card 1/2

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USSR / General Problems of Pathology. Tumors U-7
Comparative Oncology. Tumors in Humans.

Abs Jour: Ref Zhur-Biol., No 15, 1958, 70942.

Author : ~~Khominskiy B. S.~~
Inst : Not given.
Title : Dislocation in Cases of Tumors of the Posterior Occipital Fossa.

Orig Pub: Tr. vseross. nauch- prakt. konferentsii neyrokhirurgov, 1953 i 1954, Leningrad, Medgiz, 1956, 101-103.

Abstract: A study of 60 tumors of the posterior occipital fossa revealed through sections, that a dislocation of the cerebellum assumed varied forms. In 19 cases there was a wedging of the omigdalae cerebelle into the foramen magnum, or according to the author into the "occipital dural funnel." The

Card 1/2

USSR / Human and Animal Morphology (Normal and Pathological). S
Nervous System. Central Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 9, 1958, No. 40781

Author : Khominskiy, B. S.
Inst : Not given
Title : On the Pathomorphology of Mycoses of the Central Nervous System.

Orig Pub : Arkhiv patologii, 1956, 18, No 4, 43-50

Abstract : Two cases of disease of the central nervous system caused by fungi are reported. In one case, in a 37-year-old patient, suddenly, following a cold, a severe neuralgic symptomatology and a periodical elevation of the evening temperature to 37.4° appeared. The patient died within 3 months following the beginning of the illness. At the autopsy 4 nodes with edema and swelling of the surrounding tissue were discovered in

Card 1/4

USSR / Human and Animal Morphology (Normal and Pathological). S
Nervous System. Central Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 9, 1958, No. 40781

the depth of the left hemisphere. Focal changes were absent in other organs. It was established histologically that the nodes represented mycotic granulomas; their external zone consisted of a massive infiltration of lymphocytes, plasmatic cells, young connective tissue cells with outgrowth of argyrophil fibers and single giant cells. The middle zone contained primarily epithelioid and giant cells and a large amount of mycelium; the fungus was partly distributed in the bodies of the giant cells. The central area of the granuloma consisted of broken down tissue with an abundant leukocytic infiltration and, in places, mycelium. The author states that the demonstrated fungus belonged to the genus Aspergillus. In the second case, in a

Card 2/4

USSR / Human and Animal Morphology (Normal and Pathological). S
Nervous System. Central Nervous System.

Abs Jour : Ref Zhur - Biologiya, No 9, 1958, No. 40781

61-year-old female patient the disease lasted for 1½ years and ended with death. The microscopical examination of the brain disclosed a picture of torulosis meningitis. The leptomeninges of the brain (particularly on the convex surface of the hemispheres) and, to a considerably lesser degree, of the spinal cord, were infiltrated with lymphocytes, plasmatic cells, fibroblasts and giant cells with inclusions of numerous yeast-like fungi, surrounded with a wide capsule. In places the inflammatory infiltration and the yeast-like fungi spread into the cortex following the adventitia of the vessels, occasionally forming microgranulomas. Isolated giant cells with yeast-like fungi were demonstrated in the lungs, spleen and the tracheobronchial lymph nodes. It is evident that the fungus was transferred

Card 3/4

USSR / Human and Animal Morphology (Normal and Pathological). S
Nervous System. Central Nervous System.

Hernial wedging of the brain in intracranial hypertension and its significance. Arkh.pat. 18 no.8:63-68 '56. (MLRA 10:2)

1. Iz patomorfologicheskogo otdela (zav. - prof. B.S.Khominskiy) Nauchno-issledovatel'skogo neyrokhirurgicheskogo instituta Ministerstva zdravookhraneniya USSR (dir. - prof. A.I.Arutyunov)

(ENCEPHALOCELE, etiology and pathogenesis,
intracranial hypertension causing hernial wedging of part of brain (Rus))
(CEREBROSPINAL FLUID,
hepertension causing wedging of parts of brain (Rus))

KHOMINSKIY, B.S., professor; KISELEVA, A.F., dotsent

Work of the Kiev Society of Pathoanatomists during November 1954 to December 1955. Arkh.pat. 18 no.8:124-127 '56. (MLRA 10:2)

1. Predsedatel' Kiyevskogo obshchestva patologoanatomov (for Khominskiy). 2. Sekretar' Kiyevskogo obshchestva patologoanatomov (for Kiseleva)

(ANATOMY, PATHOLOGICAL)

U-7

USSR / General Problems of Pathology. Tumors.
Comparative Oncology. Tumors in Humans.

Abs Jour: Ref Zhur-Biol., No 15, 1958, 70928.

Author : ~~Khominskiy B. S.~~
Inst : Not given.
Title : New Trends in the Interpretation and Classification of Glial Tumors.

Orig Pub: Arkhiv Patologii, 1957, No 4, 3-17.

Abstract: Proposes a new histological and biological classification based on a morphological study of 620 sections of glioma, 500 biopcies, and literature. The new classification will include, besides a decreased differentiation i.e., the origin of the tumor as derived from embryonic cells, some reverse manifestations, or a differentiation of the mature glial cells (see attached table).

Card 1/6

U-7

USSR / General Problems of Pathology. Tumors.
Comparative Oncology. Tumors in Humans.

Abs Jour: Ref Zhur-Biol., No 15, 1958, 70928.

Abstract: Presents a brief clinical and anatomical description of the most frequently observed brain tumors. Proposes a classification different from the well known classification by Rio Ortega (1932), insofar that the group of multiform glioblastoma is segregated by the author as a series of independent forms -- benign and malignant tumors with different histogenesis.

Histogenesis (Maternal Cells)	Stages of Cataplasia (or immaturity)		
	I	II	III
Astrocytes	Astrocytoma: fibrillare, protoplasmatic, reticular.	Astrocytoma atypical	Glioblastoma

Card 2/6

Card 3/6

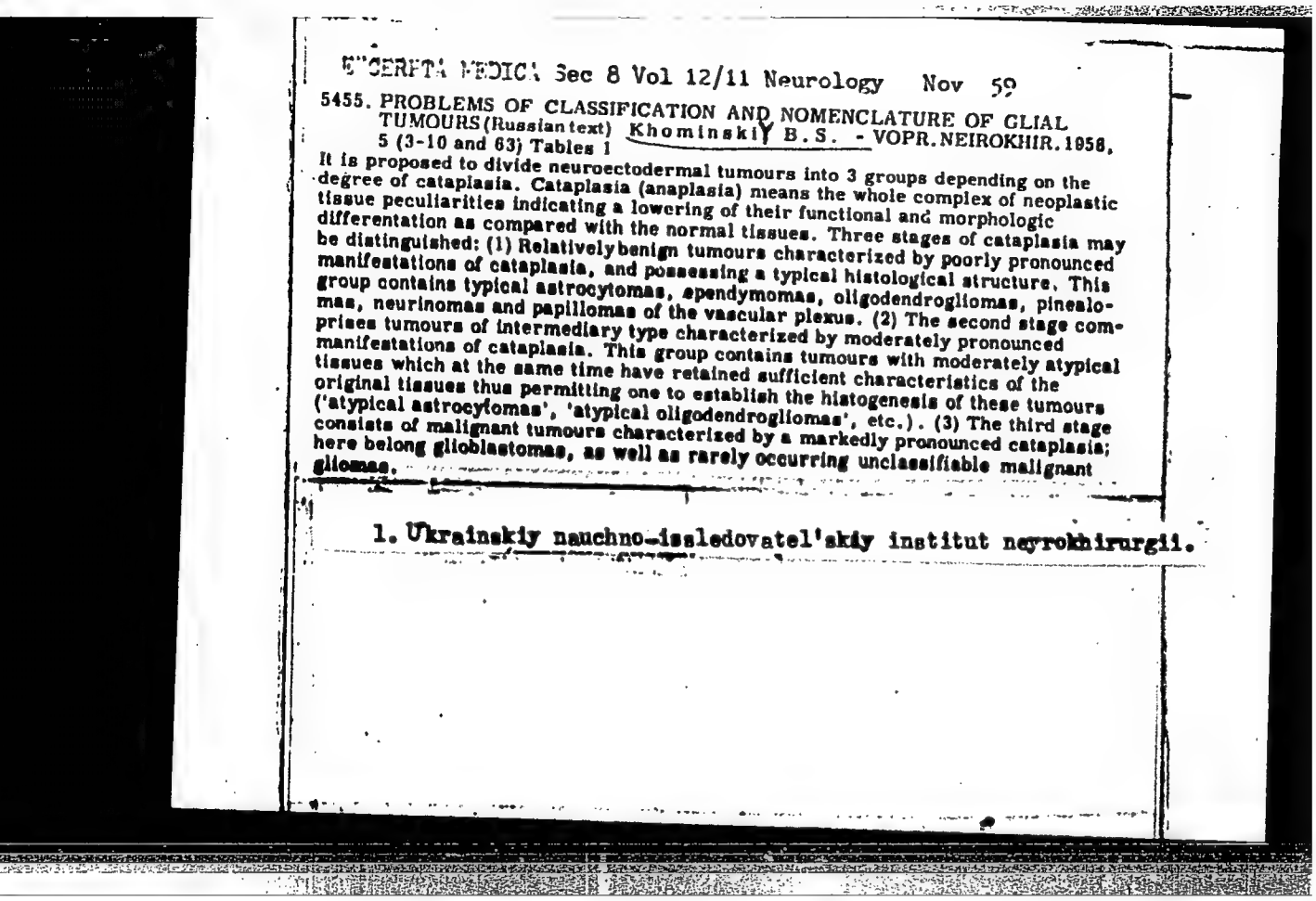
USSR / General Problems of Pathology. Tumors. U-7
Comparative Oncology. Tumors in Humans.

Abs Jour: Ref Zhur-Biol., No 15, 1958, 70928.

Abstract:

Histogenesis (Maternal Cells)	Stages of Cataplasia (or immaturity) I	II	III
Ganglia cells (mature and embryonic)	Gangliocytoma (or ganglioneuroma)		Neuroblastoma - a more differentited form (disguised as: sympathoblastoma, sympathogonioma)
Glia cells plus vascular connective	Angioglioma (Russi and Oberlen)	-	Malignant bidermal tumor

Card 5/6

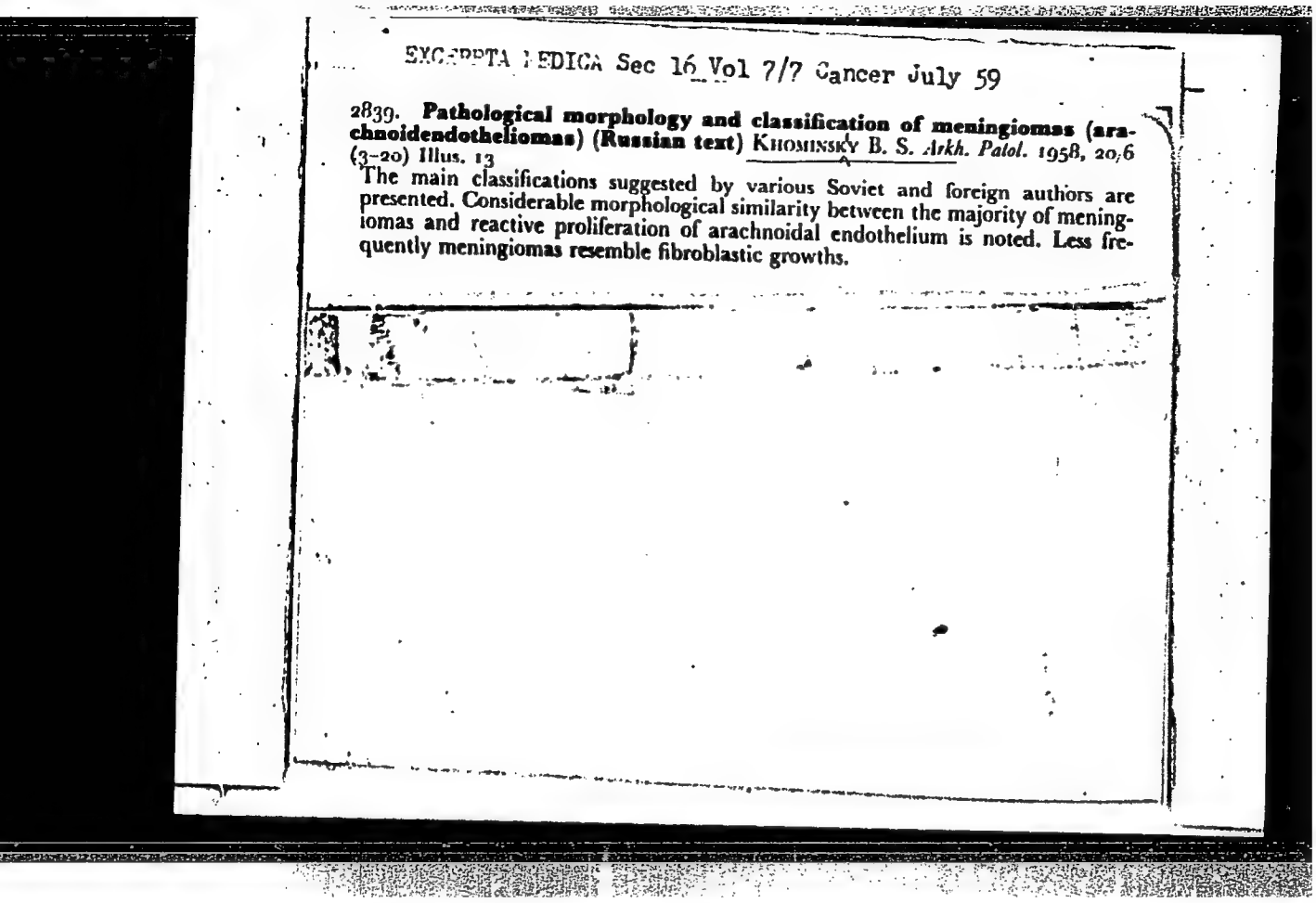


EXCERPTA MEDICA Sec 8 Vol 12/11 Neurology Nov 59

5455. PROBLEMS OF CLASSIFICATION AND NOMENCLATURE OF GLIAL TUMOURS (Russian text) Khominskiy B.S. - VOPR. NEIROKHIR. 1958, 5 (3-10 and 63) Tables 1

It is proposed to divide neuroectodermal tumours into 3 groups depending on the degree of cataplasia. Cataplasia (anaplasia) means the whole complex of neoplastic tissue peculiarities indicating a lowering of their functional and morphologic differentation as compared with the normal tissues. Three stages of cataplasia may be distinguished: (1) Relatively benign tumours characterized by poorly pronounced manifestations of cataplasia, and possessing a typical histological structure. This group contains typical astrocytomas, ependymomas, oligodendrogliomas, pinealomas, neurinomas and papillomas of the vascular plexus. (2) The second stage comprises tumours of intermediary type characterized by moderately pronounced manifestations of cataplasia. This group contains tumours with moderately atypical tissues which at the same time have retained sufficient characteristics of the original tissues thus permitting one to establish the histogenesis of these tumours ('atypical astrocytomas', 'atypical oligodendrogliomas', etc.). (3) The third stage consists of malignant tumours characterized by a markedly pronounced cataplasia; here belong glioblastomas, as well as rarely occurring unclassifiable malignant gliomas.

1. Ukrainskiy nauchno-issledovatel'skiy institut neyrokhirurgii.



EXCERPTA MEDICA Sec 16 Vol 7/7 Cancer July 59

2839. **Pathological morphology and classification of meningiomas (arachnoidendotheliomas) (Russian text)** KHOMINSKY B. S. *Arkh. Patol.* 1958, 20/6 (3–20) Illus. 13

The main classifications suggested by various Soviet and foreign authors are presented. Considerable morphological similarity between the majority of meningiomas and reactive proliferation of arachnoidal endothelium is noted. Less frequently meningiomas resemble fibroblastic growths.

KHOMINSKIY, B.S.; BRODSKAYA,I.A.; VERKHOGLYADOVA, T.P.; KVITNITSKIY-RYZHOV, Yu.N.; TUSHEVSKIY, V.F.

Changes in the cerebral matter in relation to the structural and biological peculiarities of brain tumors. Probl.neirokhir. 4:277-302 '59. (MIRA 13:11)

(BRAIN--TUMORS)

KHOMINSKIY, B.S., prof. (Kiyev)

Questions open to discussion on the subject on intracerebral tumors of mesenchymal genesis. Vop.neirokhir. 24 no.5:1-8 S-O '60. (MIRA 13:11)

1. Ukrainskiy nauchno-issledovatel'skiy institut neyrokhirurgii.
(BRAIN—TUMORS)

KHOMINSKIY, B.S., prof. (Kiyev)

Some discussion questions on the interpretation of neuroectodermal tumors. Vop.neirokhir. 25 no.1:9-16 '62. (MIRA 15:1)

1. Ukrainskiy institut neyrokhirurgii.
(BRAIN—TUMORS) (MEDICINE—TERMINOLOGY)

KHOMINSKIY, B.S. (Kiyev)

Degree of malignancy as reflected in modern classifications of tumors of the nervous system. Vop. neirokhir. 27 no.5:1-7 S-O '63. (MIRA 17:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut neyrokhirurgii (dir. - prof. A.I. Arutyunov).

ROMODANOV, A.P., otv. red.; ZOZULYA, Yu.A., zam. otv. red.; AGASHEV-KONSTANTINOVSKIY, A.L., red.; KHOMINSKIY, B.S., red.; BROTMAN, M.K., red.; DUKHIN, A.L., red.

[Problems of neurosurgery; clinical, pathophysiological and morphological principles in neurosurgical pathology] Problemy neirokhirurgii; klinicheskie, patofiziologicheskie i morfologicheskie zakonomernosti v neirokhirurgicheskoi patologii. Kiev, Zdorov'ia, 1964. 332 p. (MIRA 18:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut neyrokhirurgii.